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Conference on Regulatory Reform in Surface Transportation Preprint Papers

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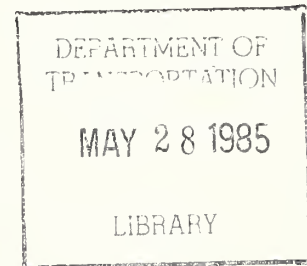
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Conference on Regulatory Reform in Surface Transportation

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Cooperating Organizations:

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Alice E. Kidder

CONTENTS

W. Bruce ALLEN, The Experience Under Unregulated Motor Carriage in New Jersey.1	✓
Richard BEILLOCK and James FREEMAN, A First Look at Arizona Motor Carrier Deregulation.....	13
William BERNHAGEN and Donald NELSON, Transportation Deregulation: New Challenge for Rural Communities, New Questions for Transportation Research.....	35
Steven E. BOLTEN, Robert L. CONN, and Jay A. SMITH, Jr., Florida Motor Carrier Deregulation: The Immediate Effect of Sudden Deregulation from the Perspective of Shippers/Receivers in Small Communities.....	48
Terence A. BROWN, Deregulation and the Marketing of Rail Piggyback Service..	79
Russell C. CHERRY, Motor Carrier Rate Uniformity: A Comparison of Rates by Geographic Area and Community Size.....	91
Garland CHOW, Truck Service to Small Rural Communities under Alternative Regulatory Environments.....	138
Sidney H. EVANS, Ridgely Abdul MU'MIN, and Harold WILLIS, An Investigation and Analysis of the Use of Motor Carrier Services by Small and Limited Resource Operators in North Carolina (Abstract).....	164
P.V. GARROD, L. HUDGINS, and W. MIKLIUS, Quality of Service in the Household Goods Carrier Industry.....	166
Jose A. GOMEZ-IBANEZ, Clinton V. OSTER, Jr., and Don H. PICKRELL, Airline Deregulation: What's Behind the Recent Losses?.....	197
C. F. HITCHCOCK, Some Thoughts on Antitrust and the Intercity Bus Industry..	226
Alice E. KIDDER, Economic Consequences of the 1980 Motor Carrier Act on Freight Service to Rural Areas.....	251
Walter MIKLIUS, Effect of Regulatory Reform on Motor Carrier Failures: A Preliminary Assessment.....	274
Walter MIKLIUS, Effect of Regulatory Reform on Motor Carrier Quality of Service.....	299
Ridgely Abdul MU'MIN, Factors Associated with Mode Utilization.....	325
Clinton V. OSTER, Jr., The New Entrant Airlines: Implications for Transportation Regulatory Reform.....	326
Michael W. PUSTAY, State Regulation and Motor Carrier Service to Small Communities.....	414
Edward H. RASTATTER and John A. WALGREEN, Regulatory Reform of the Intercity Bus Industry.....	430
Merrill J. ROBERTS, Regulatory Interfaces and the Trucking Industry...	453
William G. STAGE, What have been the Effects of Deregulation on the Intercity Bus Industry in Florida?.....	490
Frederick C. THAYER, Jr., Economic Regulation and Safety Regulation...	510
Kenneth C. WILLIAMSON, Marc G. SINGER, and Roger A. PETERSON, Deregulation's Impact on Selected Distribution Activities.....	513

THE EXPERIENCE UNDER UNREGULATED MOTOR CARRIAGE IN NEW JERSEY*

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Introduction: In the 1970's, considerable debate existed concerning the benefits versus costs of motor carrier deregulation. Identification of the gainers and losers, the types of benefits and costs, the transitional impacts, etc., were all subject to a great deal of debate.

The advocates of regulation presented economic theoretical models to argue that strictly regulated entry coupled with collective rate-making transformed an inherently competitive industry into an industry with the inherent characteristics of a monopoly, i.e., high prices and restricted output. These same advocates presented empirical evidence that demonstrates that the Canadian and European experiences with less regulation were successful (e.g., offered lower rates), that the U.S. experience with the agricultural exemption was successful in transforming that industry toward the competitive ideal, that excess profits were being made in the regulated motor carrier industry and that the inputs into the motor carrier industry were earning supracompetitive factor prices, e.g., Teamster labor.

The advocates of the regulatory status quo pointed to the economic chaos which existed in the motor carrier industry prior to regulation, the problems of the holding of assumptions and the ceteris paribus assumptions in the theoretical models, as well as the differing cultural or commodity mixes when empirical studies were cited. At times, the rhetoric of both groups was extremely heavy.

*Based on the study "Examination of the Unregulated Trucking Experience in New Jersey" by W. Bruce Allen, Steven Lonergan, and David Plane, United States Department of Transportation, DOS/RSPA/DPB-50/79,13, Washington, D.C. December 1979.

The New Jersey study described herein was an empirical study undertaken in the late 1970's designed to answer some of the criticisms of the earlier empirical studies, e.g., the cultural differences were controlled for, the commodities were general freight, commodity type and distance and service quality were controlled for, etc.

The Study: New Jersey is the fifth smallest state in terms of land area, but since it is ninth in population, it ranks first in terms of population density. Ninety seven percent of the total value of production in the state comes from manufacturing. Thus the relatively short distances involved, the dispersion of large amounts of population (for retail trade) and the distribution of large amounts of manufacturing makes New Jersey a state with the potential for a large amount of intrastate motor carrier traffic. The 1976 CTS (Continuing Traffic Study) shows that New Jersey ranks twelfth in terms of intrastate general freight tonnage.

While approximately half the states had passed motor carrier legislation prior to the passage of the Motor Carrier Act of 1935 and the other half passed motor carrier legislation after the Motor Carrier Act of 1935, two states have never passed motor carrier regulatory statutes. New Jersey is one and Delaware the other. While Florida, Arizona, and Maine have recently deregulated, while Virginia and Maryland have not regulated truckload traffic, and while many states have either instituted reform or are contemplating reform since the passage of the Motor Carrier Act of 1980, only New Jersey and Delaware have a long history of deregulation. Thus an analysis of the New Jersey market enables a study of the long run effects of operation in a deregulated market.

-3-

From time to time, some legislative attempts were made to regulate in New Jersey. In the 47 years since Federal regulation, the number of attempts to regulate the New Jersey motor carrier industry in some form was approximately twenty. Only seven of these were since 1960, and none of those applied to general freight. The lack of legislative action and the lack of a public forum on the issue can be construed to be a revealed preference for the deregulated environment. Even the New Jersey Motor Truck Association, the state's American Trucking Associations affiliate, dropped (prior to 1970) its early push for regulation when its own members could not agree on a regulatory posture for the organization.

The purpose of the research was to compare the rates for comparable (weight, distance, commodity) shipments in the unregulated intrastate market. For each shipment, intrastate and interstate, the New Jersey origin or destination was the same. Holding the shipment characteristics constant the intent of the research was to attribute the rate differences in the intra and interstate market to the difference in regulatory structure in the intra and interstate market.

A significant portion of the information gathered in the study came from traffic managers of the state's manufacturing community and from traffic managers of the state's motor carrier community.

The sampling methodology was to attempt to interview every traffic manager of a manufacturing firm listed as employing 250 or more persons in the New Jersey State Industrial Directory. Such firms were arbitrarily defined as large firms. The Industrial Directory listed 454 such firms. Interviews were completed with 86.2% or 392 of those firms. Firms employing between 20 and 249 persons were arbitrarily defined as small firms. A 5% sample of these firms or 276 firms was randomly

selected for interviewing. Interviews were held with 80.4% or 222 of these firms.

The information obtained in the interview consisted of a limited amount of "hard" data, i.e., actual bills of lading, copies of rates paid, names of truckers utilized, volume of shipment figures, etc., plus a much larger quantity of partially subjective data based on the traffic manager's experience in the business, or on his (her) best estimates of the specific factual data requested. The data fall into three main subject areas: (1) background statistics on the volume and nature of intrastate shipping, and the carriers utilized for this shipping (2) rates paid for intrastate movements versus rate levels for comparable movements interstate and (3) subjective opinions on the level of intrastate service and the desirability of maintaining the current unregulated environment in New Jersey.

The results show that the carrier option used by most interstate shippers/receivers is the common carrier with ICC authority. The second largest option used is private carriage. The least utilized option is that where strictly unregulated intrastate carriers are used exclusively for intrastate New Jersey traffic. Many shippers/receivers use both ICC authority and strictly unregulated carriers. The results also show that shippers/receivers use unregulated intrastate carriers for both truckload (TL) and less than truckload (LTL) shipments.

A major focus of the traffic manager survey portion of the study was to compare actual rates being paid for intrastate New Jersey shipments to regulated tariff rates for comparable shipments (same weight, volume, distance, etc.) interstate. The comparison was done on the basis of Middle Atlantic Conference (MAC) rate bureau tariffs (or other relevant regulated rates) which are published for New Jersey origins to New Jersey destinations as well as for inter-state routes involving New Jersey. While many firms were

hesitant to release actual freight bills from which a direct comparison could be made, a number either did do so, or allowed us to make "spot" comparisons for specific routes.

The general rate results are presented in Table 1 and Table 2 for the firms which responded to the rate level question. Most respondents gave us a range of percentages below MAC tariffs that they could negotiate for their intrastate New Jersey shipments. Only three respondents reported intrastate rates higher than MAC rates. In the tables, "ten to twenty percent below", has the following explanation: "ten" would be the high rate and "twenty" would be the low rate.

As is shown in tables 1 and 2, the mean average interstate rates below interstate rates are between 9.7% and 15.2% for large firms and between 8.5% and 11.4% for small firms. When the above information is disaggregated by type of shipments (TL vs. LTL) and carrier options used, some interesting results emerge. Larger rate reductions are possible for TL movements than for LTL movements, shippers/receivers which do not utilize the unregulated intrastate New Jersey carriers for their intrastate movements receive a significantly smaller discount on MAC rates than do shippers/receivers which utilize one or more unregulated intrastate New Jersey carriers.

Both larger and smaller firms felt that intrastate New Jersey service quality was better than or equal to interstate markets. Of the large firms responding, 43% felt that intrastate New Jersey service was better than interstate, 2% thought it was worse, and 55% thought that they were the same. Of the small firms responding, 31% felt that intrastate New Jersey service was better than interstate, 3% thought it was worse, and 66% thought that they were the same.

Furthermore, the rate results, when compared with the service

Table 1

Distribution of High Rate Figures for Intrastate Movements

<u>Per Cent Below MAC</u>	<u>Large Firms</u>	<u>Per Cent of Those Making Estimates</u>	<u>Small Firms</u>	<u>Per Cent of Those Making Estimates</u>
0	60	35	39	53
1-10	57	34	12	16
11-20	35	21	12	16
21-30	12	7	6	8
31-40	5	3	3	4
41-50	1	1	1	1
Lower -				
No %	35	-	13	-
Higher	2	-	1	-
Not Applicable or No Response	247	-	189	-
Mean % Below MAC	9.7%	-	8.5%	-

Table 2

Distribution of Low Rate Figures for Intrastate Movements

<u>Per Cent Below MAC</u>	<u>Large Firms</u>	<u>Per Cent of Those Making Estimates</u>	<u>Small Firms</u>	<u>Per Cent of Those Making Estimates</u>
0	47	27	35	48
1-10	39	23	9	12
11-20	48	28	15	21
21-30	21	13	7	10
31-40	9	5	3	4
41-50	3	2	4	5
51-60	3	2	0	0
61-70	1	1	0	0
71-80	1	1	0	0
81-90	1	1	0	0
Lower -				
No %	36	-	13	-
Higher	2	-	1	-
Not Applicable or No Response	243	-	189	-
Mean % Below MAC	15.2%	-	11.4%	-

quality responses, showed that those who felt that intrastate service quality was higher received the greatest discounts (large firms 11.7-17.8%, small firms 16.2-23.0%). Firms who felt that the two service qualities were comparable received smaller discounts (large 7.4-11.2%, small 4.7-5.3%). Firms who felt that the intrastate service quality was lower received the smallest discounts (large 3.8-6.3%, small 0.0-2.5%).

As might be expected given the above results, shippers and receivers overwhelmingly (90%) advocated the continuance of the regulatory status quo in New Jersey. Firms favoring the regulatory status quo received significantly larger rate discounts (large 10.3-15.7%, small 9.1-12.1%) than did firms which advocated more intrastate regulation (large 7.3-8.2%, small 4.0-7.3%). In addition, of the firms advocating more regulation, only 15% had used non regulated intrastate New Jersey motor carriers.

From a shipper/receiver perspective, the deregulated environment in New Jersey is overwhelmingly successful. Service levels are high, rates are low, and no desire exists to regulate the industry. The public interest is served by the lack of regulation as demonstrated by the lack of a public or legislative forum on motor carrier regulation.

The other major interest group in New Jersey intrastate motor carrier regulation are the carriers. In an unregulated state, these carriers were difficult to identify since they did not have to register with the PUC and since many chose not to join the New Jersey Motor Truck Association. Carriers doing business in the state were, therefore, identified from shipper/receiver user reports, newspaper want ads, yellow pages, etc. Utilizing these sources, we identified 734 carriers doing business in the non regulated New Jersey market. While we

attempted to interview all carriers, interviews were held with 430 (58.5%).

Eighty one percent of the respondents held ICC certificate/permits. The remaining 19% were strictly deregulated carriers. The ICC regulated carriers are six times larger on average than the strictly unregulated intrastate carriers (78 employees vs. 13 employees). Of the ICC regulated carriers, 45% did less than 30% of their trip business within the state and 19% did over 70% of their business in the state. On the other hand, only 15% of the non ICC carriers do less than 30% of their trips within the state while 68% do over 70% of their business within the state*. In an extremely limited sample, the non ICC carriers had a significantly lower operating ratio than did ICC carriers (88 vs. 96). ICC carriers had a 37 year average years in business, whereas the non ICC carriers averaged 18 years, indicating that returns in the intrastate market had been sufficient to allow capital to be replaced.

The non ICC carriers had approximately the same cargo profile as the ICC regulated carriers, i.e., 45% LTL less than 30% of business, 20% LTL between 30 and 70% of business, and 35% LTL greater than 70% of the business. The average length of haul in the New Jersey intrastate market is 50 miles.

Three methods were utilized by the carriers to determine their intrastate rates.

1. strict adherence to MAC tariff (or other rate bureau tariffs) which are published for intrastate New Jersey hauls, even though they are not binding on the carriers
2. use of MAC tariffs as a guideline in structuring rates (e.g., cutting 10% off this tariff rate for all unregulated shipments)

*Out of state business occurs mainly in the New York and Philadelphia commercial zones.

-9-

3. determination of rates by estimating costs and reasonable profit, with no reference to the MAC tariff.

The carriers will inform the public of their rates via a published traditional formal tariff, the publication of a simplified tariff, e.g., a single sheet listing rates per hundred weight for all goods to/from the state's 21 counties, a letter stating the rate(s) for the move(s) for the specific shipper/receiver, a "handshake" agreement between the carrier and the shipper/receiver etc. In the latter two cases, in particular, the shipper/receiver and carrier have bargained for the rates.

Table 3 shows the determination of the rates by the carriers in New Jersey.

Table 3

Method of Determination of Unregulated Intrastate Rates by Motor Carriers
in New Jersey

	ICC Carriers	Unregulated Carriers
Adhere to MAC tariff	49.4%	25.8%
Use MAC tariff as a guide	20.1%	19.4%
Determine Own rates	30.5%	54.8%

As can be seen in Table 3, ICC regulated carriers are strongly dependent (69.5%) on the MAC tariff, either adhering to it (49.4%) or using it as a guide (20.1%). On the other hand, only 25.8% of the strictly unregulated carriers adhere to the MAC tariff and 19.4% use the MAC tariff as a guide, indicating a 45.2% dependence on the MAC tariff. Stated in another manner, 54.8% of the strictly unregulated carriers make their own rates independent of the collectively set MAC tariff whereas only 30.5% of the ICC carriers make their intrastate New Jersey rates independent of the MAC tariff.

Non certificated carriers reported that their intrastate New Jersey rates were 14.5% less than the MAC tariff rates while ICC

certificated carriers reported that their rates were 11.7% less than the MAC tariff rates.

The carriers expressed a greater desire for regulation than did the shippers/receivers. But in the case of all carriers, the majority (56.7%) expressed a desire to retain the status quo in intrastate regulation whereas 43.3% desired more regulation. Non ICC regulated carriers only marginally preferred the status quo over ICC regulated carriers.

Interestingly, more of the non ICC carriers (56.6%) reported that entry into the New Jersey market was difficult while 47.2% of the ICC carriers reported difficult entry. Presumably this is related to the fact that intrastate New Jersey business is a by-product for many ICC regulated carriers. A strictly intrastate New Jersey carrier must establish itself with shippers/receivers. This is a significant barrier to entry -- a type of good will establishment. As a result, many new entrants are individuals who have driven for other carriers and have established a reputation with the traffic managers.

Conclusion: Since almost 20% of the carriers participating in the unregulated intrastate New Jersey market are strictly unregulated carriers, and the average age of such carriers is over 18 years, it is demonstrated that sufficient intrastate volume and profit exists to allow carriers to enter and remain in the market in the long run. The industry does have exit as well as entry but it does exhibit stability where carriers stay in the market and replace capital. In addition, the scanty evidence available shows that the strictly intrastate carriers are more financially healthy in intrastate operations than are the ICC regulated carriers.

While the non regulated intrastate rates are lower than comparable regulated interstate rates (by 10-15%) as admitted by the shippers/receivers and by the carriers, the collectively set regulated rates --

-11-

although not binding, are utilized in some fashion by 70% of the ICC regulated carriers and by 40% of the non ICC regulated carriers. This suggests that the rates in New Jersey may be higher than would be the case if the MAC tariff were not in existence, acting as an umbrella holding up the intra-state rates.

One interesting conclusion of the study was that a number of shippers/receivers reported that they had been offered greater discounts from the MAC tariff than they were currently utilizing. In many cases, they chose not to utilize such carriers. It seems that the traffic managers had chosen a target rate and once having obtained it were more concerned with preserving the carrier which provided such a rate.

A number of alternative hypotheses were offered to explain the empirical results obtained. These hypotheses were offered by the author and by others seeking to explain the New Jersey results. For instance, lower New Jersey rates by ICC certificated carriers could be caused by by-product pricing. Or, low rates by strictly intrastate New Jersey carriers are caused by the use of non union labor. Or, strictly regulated states, e.g., Missouri, also have intrastate rates significantly below ICC interstate rates. While these situations may be true, they don't deny the fact that New Jersey accomplishes rates 10-15% below comparable regulated rates, with better than or equal service quality, without any regulatory apparatus, as the result of market forces playing between the demanders and suppliers of the service. The net conclusion is that the New Jersey regulatory scheme works. Small and large shippers gain. The majority of carriers advocate the system.

The New Jersey trucking study played a role in showing Congress and other interested bodies that general freight deregulation in the United States has always existed and has been continuously successful.

To that extent, the New Jersey trucking study made the road to the passage of the Motor Carrier Act of 1980 easier.

A First Look at Arizona
Motor Carrier Deregulation

By

Richard Beilock and James Freeman

This study was partially funded under a contract with the Arizona Department of Transportation and the Federal Highway Administration.

Senior authorship is not assigned.

On July 1, 1982, Arizona deregulated its motor carrier industry, following the lead of Florida which deregulated on July 1, 1980. In order to assess the initial impacts of Arizona's deregulation, surveys were sent to shipper/receivers and carriers located throughout the state. In this paper, some of the results of that effort are presented and analyzed. When appropriate, comparisons are made with the results of a similar survey conducted in Florida by the authors one year after that state deregulated and an earlier Arizona survey conducted in June 1982, just before its deregulation started.

Although it is still much too early to make predictions about the effect of trucking deregulation in Arizona and although additional research will be needed, especially for purposes such as sorting out the effects of deregulation from the effects of Arizona's new weight and distance tax on truckers and shippers, these results should yield some idea of the preliminary trends in Arizona. Furthermore, the striking similarities between Arizona's deregulation experiences to date and those in Florida after one year of deregulation suggests the possibility that deregulation may follow a fairly consistent pattern in various jurisdictions, even if they have widely differing characteristics.

In November 1982, surveys concerning motor carrier deregulation were sent to each motor carrier of freight holding membership in the Arizona Motor Transport Association, Inc. A similar survey was sent to all businesses in Arizona-- with the exception of motels, hotels, resorts and financial institutions--which were listed in the 1982 Dun & Bradstreet Million Dollar Directory of small, medium, and large businesses. The motels and banks were omitted because it was unlikely that they would use common carriers to any appreciable extent. Of the 160 surveys sent to carriers, 76 were returned, for a response rate of 48 percent, with 63 being usable. The shipper sample originally totalled 787, but 45 surveys were returned due to bankruptcy, incorrect address, etc. Of the net potential sample of 742, 216 were returned, for a response rate of 29 percent, with 193 being usable.

ANALYSIS OF THE DATA

Overview of Shipper/Receiver Responses

Appendix A lists the responses of Arizona and Florida shipper/recievers (S/R) to various questions concerning motor carrier deregulation. In almost every instance, the differences between the June 1982 Arizona survey data and the November 1982 survey data are slight and are statistically insignificant. Thus, the June 1982 survey will be referred to only when it is at major variance with the November survey.

About 17 percent of the S/R believe that intrastate trucking service has improved under deregulation, while 17 percent believe that it has declined. The 17 percent improved figure represents a large fall from the June 1982 survey in which 33 percent of the respondents expected improved service. One possible reason for this is derived from the fact that 24 percent of the S/R have had carriers cut back the services they receive, a figure much higher than the 9 percent of S/R in Florida which noted cutbacks one year after deregulation of that state. Still, 46 percent of Arizona S/R have received offers of new service since deregulation, a figure almost twice as high as the number facing cutbacks. Other contributing factors to the lowered perception of the impact of deregulation may relate to the fact that service has not speeded up as much as many people expected and that competition has not increased as much as was expected. These problems probably stem more from unfounded S/R expectations about deregulation than from actual problems resulting from deregulation. Arizona's experience to date is certainly at least as favorable as Florida's at an equivalent time. Service cutbacks were somewhat higher in Arizona than Florida, and offers of new service were somewhat lower in Arizona, but the number of S/R being offered discounts or special incentives was higher in Arizona (43 percent to 33 percent) and the number reporting increased claim problems was lower (6 percent to 12 percent). Comparable percentages in both states noted increased difficulty in shipping freight due to deregulation, and their experiences with speed of service to intrastate points were also comparable. Arizona S/R, however, were more likely to experience an increase in competition due to deregulation (61 percent to 53 percent) and were much less likely to see decreased competition (4 percent to 24 percent). In both

states, very few S/R reported that they were considering expanding in-house (private) trucking capacity because of deregulation. This statistic suggests that, at least for larger S/R, deregulated motor carriage is performing in a timely and efficient manner.

Three times as many Arizona S/R believe that rates are lower due to deregulation than believe rates have increased (27 percent to 9 percent). This 27 percent figure represents a major decline from 58 percent of S/R surveyed in June 1982 who thought that rates would fall. Almost half of S/R are uncertain concerning the effect of deregulation on rates, another strong indication that opinions on the issue may undergo major revision in the next year or two.

In an attempt to separate the effects of a new weight and distance tax which also took effect in Arizona on July 1, 1982, questions pertaining to the tax were included in the survey instruments. At the present time, most S/R (62 percent) believe that the effect of the tax is to raise rates. Thus, the effect of the tax may account for the sharp decline in the perceptions of S/R concerning lowered rates due to deregulation.

Only 9 percent report that they are having to pay more combination rates, which tend to be higher, and fewer joint or through rates, which tend to be lower, than was the case under regulation. Although a large majority (59 percent) of S/R remain uncertain on the subject, this early result should tend to allay fears that deregulation (and the resulting loss of antitrust immunity) would make it difficult for carriers to work out agreements among themselves concerning how to transport multiple-line movements (i.e., situations in which a shipment is handled by more than one carrier between its origin and destination) at the lowest possible cost to S/R.

Finally, despite the fact that there appears to have been some erosion in S/R expectations and perceptions about the benefits of deregulation, there has been no backing off from overall support by S/R for the concept of deregulation. Fifty-eight percent of S/R prefer Arizona deregulation to regulation, and only 13 percent would like to return to regulation, figures which are very comparable to the June Arizona S/R survey and to similar Florida data. Support for national trucking deregulation appears actually to have increased since Arizona began experiencing intrastate deregulation. Sixty-nine percent of the surveyed S/R expressed support for national

deregulation in the November 1982 survey, up from 58 percent in June. In sum, although deregulation to date may not have lived up to all expectations about its purported benefits, S/R support for deregulation remains strong. Based on equivalent Florida data, the experience of deregulation to date is just about what S/R should expect. There are some benefits and some drawbacks, but from the S/R perspective, the benefits substantially outweigh the drawbacks.

Cross-Tabulations of S/R Data

Even though it appears that, on balance, S/R benefit from deregulation, public policy might still favor regulation if deregulation places some groups, such as rural or small S/R; at a serious disadvantage. In other words, a breakdown in trucking service to a particular segment of the Arizona business community, such as small stores in rural areas, might be used as a policy justification for opposing deregulation, even though it appears that a majority of the larger, more urban S/R benefit from deregulation. In order to see if any particular sub-grouping of S/R is more likely to be opposed to deregulation and/or to be harmed by it, various cross-tabulations were run. Regulatory preference, annual sales volume, and urban or rural location turned out to be the most revealing sub-groupings.

1. Regulatory Preference

As it is likely that those S/R which are harmed by deregulation will dislike it, a cross-tabulation of S/R by regulatory preference tends to shed light on problem areas, if any, and allows researchers to check for consistency in the data. For instance, it would be most unusual if those S/R favoring deregulation thought that service had declined and rates had increased dramatically since deregulation. Some potential problem areas were identified, but no inconsistencies were discovered.

Not surprisingly, a strong relationship exists between S/R preference for deregulation and beliefs that overall service has improved. S/R preferring deregulation are highly unlikely to have experienced carrier service cutbacks and are very likely to support national deregulation, again findings that one would expect. S/R's believing there is lessened

difficulty of shipping freight, lower rates, more competition, and faster service tend to be supportive of deregulation, while those holding the opposite opinion tend to prefer a return to regulation. In sum, there are no unusual findings in this cross-tabulation, S/R who think that rates, service, or competition have increased support deregulation, and the others do not. The data are as expected and appear to be consistent.

2. Urban-Rural Split

One concern often voiced by supporters of regulation is that rural areas will face poorer service and higher rates under deregulation, and that urban areas benefit from deregulation only at the expense of these rural areas. In order to test this contention, cross-tabulations were run comparing the preferences of rural S/R to urban S/R. Two definitions of "rural" were used--one being "not located in a major metropolitan area or near a major highway," a definition which had been successfully used by these researchers in earlier Florida surveys, and the other being "not located in the Phoenix or Tucson metropolitan areas." The second definition yielded more meaningful results and will be used in the remainder of this section. Twenty-five percent of responding S/R were classified as rural and 75 percent as urban (Table 1).

Few differences exist between the perceptions of urban and rural S/R which are statistically significant at any conventional level. Each subgroup contains roughly the same percentage of S/R shipping under 50 shipments weekly, and each one contains about the same percentage of small shippers (as determined by annual sales volume). In effect the only difference between the groups is their location.

Rural shippers are slightly more likely than urban shippers (21 percent to 10 percent) to believe that overall service quality has improved and has speeded up (17 percent to 11 percent). Moreover a slightly smaller percentage of rural shippers have not had their service cut back (75 percent to 80 percent). Rural shippers, however, are somewhat less likely to have received offers of new service (38 percent to 48 percent), and discounts (33 percent to 46 percent), or to believe that deregulation has depressed rate levels (23 percent to 28 percent). Rural shippers are somewhat more likely to have reduced claims problems (13 percent to 4 percent) and to report more

Table 1. Tabulations of Shipper/Receiver Responses by Location in or not in the Phoenix/Tucson Metropolitan Areas

	Urban		Rural	
	Responses	(Percent)	Responses	(Percent)
<u>Overall Service Quantity</u>				
Improved	23	(16)	10	(21)
No Change	53	(37)	21	(45)
Declined	25	(18)	7	(15)
Not Certain	41	(29)	9	(19)
<u>Service Cutbacks</u>				
Yes	33	(25)	9	(20)
No	100	(75)	36	(80)
<u>Offers of Deals or Discounts</u>				
Yes	66	(48)	18	(38)
No	71	(52)	29	(62)
<u>More Combination Rates</u>				
Yes	10	(7)	6	(12)
No	43	(31)	18	(38)
Not Certain	87	(62)	23	(49)
<u>Effect of Deregulation on Rates</u>				
Higher	10	(7)	7	(15)
No Effect	21	(15)	14	(29)
Lower	40	(28)	11	(23)
Uncertain	72	(50)	16	(33)
<u>Claims Problems under Deregulation</u>				
Higher	9	(7)	2	(4)
No Effect	122	(90)	37	(82)
Lower	5	(4)	6	(13)
<u>Speed of Service</u>				
Faster	15	(11)	8	(17)
Slower	22	(17)	6	(13)
No Change	96	(72)	32	(70)
<u>Competition for Freight</u>				
Increased	82	(60)	30	(65)
Decreased	3	(2)	4	(9)
No Change	52	(38)	12	(26)
<u>Difficulty Arranging Carriage</u>				
Higher	15	(11)	10	(22)
No Effect	114	(83)	32	(70)
Lower	9	(7)	4	(9)
<u>National Regulatory Preference</u>				
Deregulation	88	(70)	30	(68)
Regulation	38	(30)	14	(32)
<u>Arizona Regulatory Preference</u>				
Deregulation	82	(59)	26	(58)
Regulation	15	(11)	9	(20)
No Preference	43	(31)	10	(22)

competition (65 percent to 60 percent), but are more likely to have increased difficulty in arranging carriage (22 percent to 11 percent).

In sum, rural shippers appear to be benefiting from deregulation just as much as their urban counterparts. Despite some variation in experiences to date with deregulation--some of which favor rural S/R and some of which favor urban S/R. The overall impression is that both groups have fared about the same under deregulation. This impression is borne out by the fact that their preferences for national and state trucking deregulation are virtually identical. Seventy percent of the urban S/R and 68 percent of the rural S/R support national deregulation, while 59 percent of the urban S/R and 58 percent of the rural S/R approve of Arizona trucking deregulation. To sum up, at this time, there appears to be no indication that deregulation is having an overall harmful effect on rural S/R. These results are consistent with Florida's experience to date.

3. Small and Large S/R

Another major concern or problem about deregulation that often is advanced by its opponents centers around the fate of small shippers. The hypothesis is that their rates will rise and service will plummet when deregulation occurs. Regulators argue that small shippers need the protection that only regulation can provide. Various definitions of small S/R were tested, and the most meaningful was found to be "less than \$5 million in annual sales." Forty-six percent of the responding S/R are small, and 54 percent are large (Table 2).

Again, the data show that there are few differences between the two groups which would be statistically significant at any conventional level of probability. This finding is consistent with Florida data. Only minor differences exist between small and large S/R with respect to overall service quantity, service cutbacks, frequency of claims, speed of service, and difficulty in arranging carriage. Large S/R fare somewhat better in offers of deals or discounts (48 percent to 38 percent), offers of new service (54 percent to 37 percent), and increased competition for freight (68 percent to 51 percent), and slightly better concerning the effect of deregulation on rates (33 percent of large S/R believe it has lowered rates versus 20 percent for small S/R). None of these results should be

Table 2. Shipper/Receiver Responses by Firm Size

	Small S/R		Large S/R	
	Responses	(Percent)	Responses	(Percent)
<u>Overall Service Quantity</u>				
Improved	11	(14)	17	(18)
No Change	31	(39)	41	(44)
Declined	12	(15)	16	(17)
Not Certain	25	(32)	19	(20)
<u>Carriers Cutting Back Service</u>				
Yes	19	(25)	19	(21)
No	56	(75)	70	(79)
<u>Offers of New Service</u>				
Yes	29	(37)	48	(54)
No	50	(63)	41	(46)
<u>Offers of Deals or Discounts</u>				
Yes	30	(38)	45	(48)
No	50	(63)	49	(52)
<u>Effect of Deregulation on Rates</u>				
Higher	8	(10)	8	(9)
No Effect	16	(20)	17	(18)
Lower	16	(20)	31	(33)
Uncertain	40	(50)	38	(40)
<u>Frequency of Claims</u>				
Higher	4	(5)	7	(8)
No Effect	67	(85)	83	(89)
Lower	8	(10)	3	(3)
<u>Speed of Service</u>				
Faster	13	(16)	10	(11)
Slower	14	(18)	13	(14)
No Change	53	(66)	67	(74)
<u>Competition for Freight</u>				
Increased	41	(51)	63	(68)
Decreased	4	(5)	3	(3)
No Change	35	(44)	27	(29)
<u>Difficulty Arranging Carriage</u>				
Higher	12	(15)	11	(12)
No Effect	61	(76)	78	(83)
Lower	7	(9)	5	(5)
<u>National Regulatory Preference</u>				
Deregulation	53	(76)	62	(68)
Regulation	17	(24)	29	(32)
<u>Arizona Regulatory Preference</u>				
Deregulation	41	(52)	63	(66)
Regulation	7	(9)	14	(15)
No Preference	31	(39)	19	(20)

surprising. There is a natural tendency on the part of carriers to seek out the more profitable business of larger S/R rather than aggressively to go after freight from small S/R. These differences, however, appear to be relatively minor and should not be construed as indicating that small S/R are being hurt by deregulation, but rather that larger S/R may be benefiting somewhat more from deregulation than smaller S/R.

One should not overlook, however, that both small and large S/R appear to be benefiting from deregulation. Both groups support both state and national deregulation. In fact, a greater percentage of small S/R than large S/R support national deregulation (76 percent to 68 percent) and a majority of small S/R (52 percent) support Arizona deregulation. Only 9 percent of small S/R want to return to regulation in Arizona, while 15 percent of larger S/R desire such a change. Thus, there is little in the data to date to indicate that small S/R are being harmed by deregulation.

Overview of Carrier Responses

Roughly one-third of the responding carriers (C) are general commodities carriers, and about half transport both interstate and intrastate traffic. Over half have an annual volume of less than \$5 million. About 38 percent are union C and 52 percent do not use any owner/operators. As was mentioned earlier, the response to the survey was very high, almost 50 percent (see Appendix "B" for complete C tabulations).

Most C agree that competition has increased since deregulation, although the amount of increased competition apparently has not reached expected levels. Sixty-nine percent of C report increased competition, however 93 percent of the June 1982 C respondents had expected competition to increase due to deregulation. Eighty-nine percent of C in Florida noted increased competition one year after deregulation. Most Arizona C think the new competition is coming either from established Arizona carriers expanding operations, new Arizona carriers, or private carriers beginning to solicit freight from other sources. Only about 15 percent have withdrawn any service, a figure well below the comparable Florida result of 30 percent. About 28 percent of C are entering into more contract agreements, presumably in an effort to tie down the business of the desirable S/R they serve. Forty-one percent are offering special deals or discounts, mostly on the

basis of how often the S/R gives business to the C or whether the S/R has received a more favorable rate from a competing C. The size of the shipment and the direction of the movement also are important factors in determining whether a discount will be offered.

Thirty-eight percent of C are setting rates differently under deregulation than they did when rates were regulated. Most set rates to meet the competition or base them on the cost of providing a particular service. Apparently C are continuing to agree on joint or through rates, because only 18 percent of C report an increase in combination rates under deregulation, while 43 percent had expected an increase to occur. Twenty-one percent of C believe that deregulation has caused rates to increase, while 43 percent see a decrease in rates. Florida C were much more likely to believe rates had risen (38 percent) and less likely to think they had fallen (29 percent). The deepening recession may account for some of the perceptions by Arizona C that rates have fallen. Also, the fact that the Florida Public Service Commission historically kept intrastate rates about 15 percent below the prevailing interstate ones may have caused fewer C in Florida to lower rates and more to raise them after deregulation became effective. About 59 percent of C believe that deregulation has had a negative effect on profitability. The higher number of negative responses in Arizona when compared to Florida (where 49 percent saw reduced profits) also may be caused somewhat by the deepening recession and, perhaps to some extent, by the weight and distance tax which took effect. Simultaneously with deregulation, many carriers stated that they are bearing the brunt of this tax because competitive conditions and the poor economy have not allowed the tax to be passed through to S/R.

Despite all of the concern expressed by C, less than half prefer a return to regulation in Arizona. Thirty-four percent prefer deregulation, 45 percent desire regulation, and 21 percent have no preference. The preferences concerning national deregulation are almost exactly identical to those for Arizona deregulation. In sum, the Arizona carrier community is still very fragmented concerning the effects of deregulation on transportation in the state, which, again, indicates that it is too early to draw long-term conclusions or to make recommendations for change on the basis of the available data.

Cross-Tabulations of Carrier Responses

Cross-tabulations of C by regulatory preference, size (as measured by annual sales volume) and other factors were carried out. Overall, the results reveal few differences between groups.

1. Small and Large Carriers

Small carriers (less than \$5 million in annual volume) are faring as well under deregulation as their larger counterparts (Table 3). Not surprisingly, carriers relying heavily on owner-operators are more likely to support deregulation than other C. There seems to be little difference between LTL truckers and others with respect to their preferences. Arizona household goods carriers, unlike their Florida counterparts, apparently have been unable to increase rates due to deregulation and are no more likely than other carriers to support it.

2. Regulatory Preference

In Table 4, C responses by regulatory preference are presented. All groups concur that competition has increased, though those in favor of deregulation were much more likely to have noted increases. Likewise, those favoring regulation were more likely than those preferring deregulation to note reduced rates due to deregulation (46 versus 29 percent, respectively). One other difference of note was that while only one-fifth of those favoring continued deregulation are unionized, fully 54 percent of those preferring a return to regulation are unionized. This result is reasonable as non-union firms may be better able to make quick adjustments in the face of changing competitive conditions.

Summary and Conclusions

The effects of deregulation in Arizona appears to coincide in large measure with those experienced in Florida. Service seems to be consistent and rural areas still have satisfactory trucking, as do small shippers. Moreover, the concensus opinion is that rates have been lowered or

Table 3. Carrier Responses by Annual Sales Volume

	Under \$5 million		Over \$5 million	
	Responses	(Percent)	Responses	(Percent)
<u>Effect of Deregulation</u>				
<u>on Rates</u>				
Increased	6	(29)	2	(11)
Decreased	7	(33)	10	(53)
No Change	8	(38)	7	(37)
<u>Effect on Profitability</u>				
Large Negative	2	(9)	5	(26)
Negative	8	(36)	9	(47)
No Effect	8	(36)	3	(16)
Positive	3	(14)	2	(11)
Large Positive	1	(5)	0	(0)
<u>Effect of Tax on</u>				
<u>Purchases</u>				
Yes	14	(64)	7	(35)
No	8	(36)	13	(65)

Table 4. Carrier Responses by Regulatory Preferences

	Regulatory Preferences					
	Deregulation		Regulation		No Preference	
	Responses	(Percent)	Responses	(Percent)	Responses	(Percent)
<u>Change in</u>						
<u>Competition</u>						
Increased	8	(50)	23	(88)	6	(50)
Decreased	1	(6)	3	(12)	1	(8)
No Change	7	(44)	0	(0)	5	(42)
<u>Rate Changes</u>						
<u>Due to</u>						
<u>Deregulation</u>						
Increased	4	(24)	5	(19)	3	(23)
Decreased	5	(29)	12	(46)	7	(54)
No Change	8	(47)	9	(35)	3	(23)
<u>Effect on</u>						
<u>Profits</u>						
Large Negative	2	(10)	4	(15)	1	(8)
Negative	3	(15)	18	(67)	7	(54)
No Effect	9	(45)	5	(19)	3	(23)
Positive	6	(30)	0	(0)	1	(8)
Large Positive	0	(0)	0	(0)	1	(8)
<u>Usage of Owner</u>						
<u>Operators</u>						
No						
Less than 1/3	7	(35)	17	(61)	8	(62)
1/3 - 2/3	4	(20)	2	(7)	2	(15)
More than 2/3	5	(25)	3	(11)	0	(0)
<u>Union Carrier</u>						
Yes	4	(20)	15	(54)	4	(31)
No	16	(80)	13	(46)	9	(69)

unaffected by deregulation. Carriers appear to be experiencing some erosion of profits, but it is hard to distinguish between the effects of the recession, the new weight and distance tax, and deregulation.

Clearly, it is still much too early to draw definitive conclusions regarding the long-term effects of deregulation in Arizona. Nevertheless, the evidence that service levels to small and rural shipper/receivers has not eroded is encouraging. Whether the positive aspects of deregulation will persist is problematical. Still, the close similarity between the Arizona and the Florida experiences lends support to the position that they will. Research in Florida reveals little or no evidence that deregulation has led to reduced service or increased rates. In neither state, however, has the performance of a deregulated trucking industry been tested under conditions of an expanding economy. Moreover, in Arizona, services to rural areas and small communities ultimately may be more adversely affected than in Florida, due to the greater distances involved from metropolitan areas to outlying regions and to the new weight and distance tax which tends to penalize longer hauls.

APPENDIX A. Shippers Responses to Surveys

	Arizona		Arizona		Florida
	June 1982		Nov. 1982		June 1981
	Responses (Percent)		Responses (Percent)		Responses (Percent)
<hr/>					
<u>Shipments</u>					
<u>per week</u>					
<u>via Common</u>					
<u>Carrier</u>					
0-10	37	(46)	125	(66)	NA
10-50	21	(26)	41	(22)	NA
50-100	12	(15)	11	(6)	NA
Over 100	9	(11)	12	(6)	NA
<u>Average</u>					
<u>Shipment</u>					
<u>Size</u>					
0-10	4	(5)	23	(12)	NA
10-100	20	(25)	54	(29)	NA
100-500	23	(29)	41	(22)	NA
Over 500	32	(40)	69	(37)	NA
<u>Average</u>					
<u>Shipment</u>					
<u>Value</u>					
0-100	7	(9)	26	(14)	NA
100-500	25	(31)	51	(27)	NA
500-1000	16	(20)	38	(20)	NA
Over 1000	30	(38)	72	(39)	NA
<u>How do you</u>					
<u>Select a</u>					
<u>Common</u>					
<u>Carrier?</u>					
Reputation	30	(38)	85	(44)	NA
Experience	58	(73)	140	(72)	NA
Salesmen	6	(8)	13	(7)	NA
Consultant	2	(3)	3	(2)	NA
Bids	4	(5)	9	(5)	NA
Negotiations	10	(13)	21	(12)	NA
Rates	30	(38)	64	(34)	NA
Other	19	(24)	19	(10)	NA
<u>Employee a</u>					
<u>Full-Time</u>					
<u>Transportation</u>					
<u>Specialist?</u>					
Yes	27	(34)	60	(32)	NA
No	53	(66)	129	(68)	NA

(continued)

APPENDIX A. (continued)

	Arizona		Arizona		Florida	
	June 1982		Nov. 1982		June 1981	
	Responses (Percent)		Responses (Percent)		Responses (Percent)	
<hr/>						
<u>Intrastate</u>						
<u>Trucking</u>						
<u>Improved</u>						
<u>Under</u>						
<u>Deregulation?</u>						
Improved	26	(33)	33	(17)	33	(24)
Stayed Same	16	(20)	74	(39)	88	(65)
Declined	15	(19)	32	(17)	11	(8)
Uncertain	22	(28)	50	(26)	NA	
<u>Existing</u>						
<u>Carriers Cut</u>						
<u>Back Service?</u>						
Yes	NA		42	(24)	13	(9)
No	NA		136	(76)	124	(91)
<u>Offers of</u>						
<u>New Service</u>						
Yes	NA		84	(46)	83	(61)
No	NA		100	(54)	54	(39)
<u>Offered</u>						
<u>Discounts</u>						
<u>or Special</u>						
<u>Incentives</u>						
<u>by Truckers</u>						
Yes	56	(71)	82	(43)	45	(33)
No	11	(14)	109	(57)	91	(67)
Uncertain	13	(15)	NA		NA	
<u>More</u>						
<u>Combination</u>						
<u>Rates and</u>						
<u>Fewer Through</u>						
<u>Rates Under</u>						
<u>Deregulation?</u>						
Yes	12	(15)	16	(9)	NA	
No	17	(22)	61	(33)	NA	
Uncertain	49	(63)	110	(59)	NA	
<u>Rates Higher</u>						
<u>or Lower Due to</u>						
<u>Deregulation?</u>						
Higher	10	(13)	17	(9)	NA	
Lower	46	(58)	51	(27)	87	(71)
No Effect	7	(9)	35	(18)	NA	
Uncertain	17	(21)	88	(46)	NA	

(continued)

APPENDIX A. (continued)

	Arizona		Arizona		Florida	
	June 1982		Nov. 1982		June 1981	
	Responses (Percent)		Responses (Percent)		Responses (Percent)	
<hr/>						
<u>Effect of</u>						
<u>Weight and</u>						
<u>Distance Tax</u>						
<u>on Rates</u>						
Raise	45	(56)	109	(62)	NA	
No Effect	18	(23)	60	(34)	NA	
Lower	5	(6)	6	(3)	NA	
<u>Effect of</u>						
<u>Weight and</u>						
<u>Distance Tax</u>						
<u>on Growth</u>						
<u>of Arizona</u>						
<u>Business</u>						
Lower	9	(11)	38	(21)	NA	
No Effect	60	(75)	134	(75)	NA	
Increase	4	(5)	7	(4)	NA	
<u>Claims</u>						
<u>Problems under</u>						
<u>Deregulation</u>						
More	26	(33)	11	(6)	17	(12)
No Change	43	(54)	159	(88)	122	(88)
Fewer	10	(13)	11	(6)	NA	
<u>Speed of</u>						
<u>Service to</u>						
<u>Arizona</u>						
<u>Points under</u>						
<u>Deregulation</u>						
Faster	32	(42)	23	(13)	24	(17)
Slower	12	(16)	28	(16)	16	(12)
No Change	33	(43)	128	(71)	98	(71)
<u>Change in</u>						
<u>Competition</u>						
<u>Due to</u>						
<u>Deregulation</u>						
Increased	63	(83)	112	(61)	69	(53)
Decreased	3	(4)	7	(4)	32	(24)
No Change	10	(13)	64	(35)	30	(23)
<u>Difficulty</u>						
<u>of Shipping</u>						
<u>Freight Due to</u>						
<u>Deregulation</u>						
Increased	11	(14)	25	(14)	14	(11)
Decreased	20	(26)	13	(7)	NA	
No Change	45	(59)	146	(79)	NA	

(continued)

APPENDIX A. (continued)

	Arizona		Arizona		Florida	
	June 1982		Nov. 1982		June 1981	
	Responses (Percent)		Responses (Percent)		Responses (Percent)	
<hr/>						
<u>More Contract</u>						
<u>Agreements</u>						
<u>under</u>						
<u>Deregulation</u>						
Yes	20	(25)	15	(8)	NA	
No	27	(34)	134	(75)	NA	
Uncertain	27	(34)	30	(17)	NA	
<u>Changing</u>						
<u>In-House</u>						
<u>Trucking</u>						
<u>Capacity Due</u>						
<u>to Deregulation?</u>						
Expanding	6	(8)	11	(6)	6	(4)
Contracting	3	(4)	6	(3)	NA	
Not a Factor	64	(80)	165	(91)	NA	
<u>Located in</u>						
<u>Major</u>						
<u>Metropolitan</u>						
<u>Area or on</u>						
<u>Major Highway?</u>						
Yes	63	(84)	155	(84)	116	(85)
No	12	(16)	29	(16)	20	(15)
<u>Prefer State</u>						
<u>Deregulation</u>						
Yes	43	(59)	108	(58)	75	(54)
No	14	(19)	24	(13)	14	(10)
No Preference	16	(22)	53	(29)	49	(36)
<u>Prefer</u>						
<u>Nationwide</u>						
<u>Deregulation?</u>						
Yes	42	(58)	118	(69)	NA	
No	14	(19)	52	(31)	NA	
No Preference	17	(23)	NA		NA	
<u>Annual Sales</u>						
<u>Volume</u>						
0-\$1 million	12	(15)	26	(15)	14	(13)
1-5	18	(23)	54	(31)	40	(36)
5-25	24	(30)	64	(36)	41	(37)
25-100	9	(11)	18	(10)	NA	
over 100	8	(10)	14	(8)	NA	

Note: Percentages may not add up to 100 due to rounding and omission of certain responses by several shippers.

APPENDIX B. Carrier Responses to Surveys

	Arizona		Arizona		Florida	
	June 1982		Nov. 1982		June 1981	
	Responses (Percent)		Responses (Percent)		Responses (Percent)	
Type of Carrier						
General						
Commodities	31		22		15	
Less-than-Truckload	23		16		17	
Truckload	28		16		18	
Household Goods	10		11		15	
Specialized	14		11		10	
Bulk	4		10		9	
Regular Route	14		13		5	
Irregular Route	22		16		18	
Common	32		30		17	
Contract	17		14		3	
Other	NA		20		4	
Primarily Intrastate	4		8		5	
Primarily Intrastate	8		4		2	
Both Interstate and Intrastate	34		33		29	
Annual Volume						
0-\$1 million	17	(28)	17	(29)	15	(30)
1-5	21	(35)	22	(37)	8	(16)
5-15	7	(12)	5	(8)	17	(34)
15-25	14	(17)	4	(7)	4	(8)
Over 25	11	(18)	11	(19)	6	(12)
Withdrawn Any Service						
Yes	10	(18)	9	(15)	14	(30)
No	39	(71)	51	(84)	32	(70)
Uncertain	6	(11)	1	(2)	NA	
If Yes, Why?						
Poor Return	7		8		NA	
Competition	3		3		NA	
Other Reasons	4		0		NA	
Increased Competition Due to Deregulation?						
Increased	56	(93)	37	(69)	41	(89)
Decreased	2	(3)	5	(9)	NA	
No Change	2	(3)	12	(22)	NA	

(continued)

APPENDIX B. (continued)

	Arizona		Arizona		Florida	
	June 1982		Nov. 1982		June 1981	
	Responses (Percent)		Responses (Percent)		Responses (Percent)	
<hr/>						
New Competition						
<u>is Coming from</u>						
Established	28		20		22	
Carriers						
New Carriers	45		27		27	
Non-Arizona						
(Florida)	20		11		22	
Carriers						
Warehouses	13		7		11	
Private						
Carriers	36		19		15	
Agricultural						
Coops	5		4		2	
Entering Into						
<u>More Contract</u>						
<u>Agreements?</u>						
Yes	17	(30)	17	(28)	18	(38)
No	28	(49)	38	(63)	29	(62)
Uncertain	12	(21)	5	(8)	NA	
Union Carrier?						
Yes	20	(34)	23	(38)	NA	
No	39	(66)	38	(62)	NA	
Use Owner/						
<u>Operator?</u>						
No	26	(44)	32	(52)	NA	
0 - 1/3	18	(31)	13	(21)	NA	
1/3 - 2/3	6	(10)	8	(13)	NA	
2/3 - 1	9	(15)	8	(13)	NA	
Offering						
<u>Special</u>						
<u>Deals or</u>						
<u>Discounts</u>						
Yes	28	(50)	24	(41)	21	(45)
No	22	(39)	34	(59)	25	(54)
Uncertain	6	(11)	NA		NA	
If Yes, How?						
Size of						
Shipments	9		11		NA	
Ease of						
Handling	7		5		NA	
Frequency of						
Business	21		16		NA	
Direction of						
Movement	14		11		NA	

(continued)

APPENDIX B. (continued)

	Arizona		Arizona		Florida	
	June 1982		Nov. 1982		June 1981	
	Responses (Percent)		Responses (Percent)		Responses (Percent)	
Time of Business	3		1		NA	
Meet Competition	19		14		NA	
More Combination Rates under Deregulation?						
Yes	23	(43)	10	(18)	NA	
No	15	(28)	45	(82)	NA	
Uncertain	15	(28)	NA		NA	
How Do You Set Rates under Deregulation?						
Cost of Service	33		19		23	
Rate Bureau	4		1		6	
Across-the-Board	5		2		14	
Meet Competition	30		31		19	
Other	3		4		4	
Setting Rates Different under Deregulation						
Yes	21	(46)	21	(38)	NA	
No	25	(54)	35	(63)	NA	
Effect of Deregulation or Rates						
Increase	12	(23)	12	(21)	18	(38)
Decrease	21	(40)	24	(43)	14	(29)
No Change	19	(37)	20	(36)	16	(33)
Effect of Deregulation on Profitability						
Large Decrease	7	(12)	7	(12)	9	(18)
Decrease	22	(39)	28	(47)	15	(31)
No Change	13	(23)	17	(28)	8	(16)
Increase	15	(26)	7	(12)	15	(31)
Large Increase	0	(0)	1	(2)	2	(4)

(continued)

APPENDIX B. (continued)

	Arizona		Arizona		Florida	
	June 1982		Nov. 1982		June 1981	
	Responses (Percent)		Responses (Percent)		Responses (Percent)	
Effect of Weight and Distance Tax on Rates						
Higher	43	(80)	30	(50)	NA	
No Effect	11	(20)	30	(50)	NA	
Effect of Tax on Arizona Business						
Lower	22	(44)	25	(42)	NA	
No Effect	27	(54)	33	(56)	NA	
Higher	1	(2)	1	(2)	NA	
Truckers Complying with Tax?						
Most Comply	NA		21	(38)	NA	
50-50	NA		29	(53)	NA	
Most Do Not	NA		5	(9)	NA	
Hurt by Non-Compliance?						
Very Much	NA		7	(13)	NA	
Somewhat	NA		20	(38)	NA	
No	NA		26	(49)	NA	
Tax Affects Purchases?						
Yes	NA		35	(57)	NA	
No	NA		26	(43)	NA	
Arizona/Florida Regulatory Preference						
Deregulation	23	(40)	21	(34)	25	(49)
Regulation	27	(47)	28	(45)	26	(51)
No Preference	7	(12)	13	(21)	NA	
National Regulatory Preference						
Deregulation	20	(34)	21	(34)	NA	
Regulation	31	(53)	27	(44)	NA	
No Preference	8	(14)	13	(21)	NA	

TRANSPORTATION DEREGULATION:
NEW CHALLENGES FOR RURAL COMMUNITIES,
NEW QUESTIONS FOR TRANSPORTATION RESEARCH

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ABSTRACT

This paper reviews current and potential transportation changes attributable to deregulation/reregulation and attempts to determine the potential impact of these changes on rural communities and small businesses. It also poses questions that remain to be answered. Questions that, when answered, will provide direction for rural communities and small businesses concerned with their medium to long-term economic viability.

TRANSPORTATION DEREGULATION:
NEW CHALLENGES FOR RURAL COMMUNITIES,
NEW QUESTIONS FOR TRANSPORTATION RESEARCH

Introduction

Since the passage of the Airline Deregulation Act (1978), the Inland Waterways Revenue Act (1978), the Staggers Rail Act (1980), and the Motor Carrier Act of 1980, a variety of individuals and vested interest groups have predicted that implementation of these acts will result in unprecedented prosperity or total economic disaster--the development of a strong transportation system or the disintegration of the existing system. There are as many "experts" predicting doom and gloom as those predicting a stronger, more competitive transportation system.

For those of us who can't wait for the passage of time or are charged to do otherwise, the task has been one of sorting out the factual implications of deregulation and federal budget cuts from those that are fictional--in identifying those impacts of a short-term duration from those of a long-term duration--in determining those changes that will result in improved community services and mode viability from those of reduced service and a weakened competitive transportation system--in recognizing those known impacts from those yet to be determined.

To date, the impacts attributable to the passage and implementation of our changing transportation policy are generally positive to all communities and small businesses, regardless of size, geographic location, or economic base. Yet, if we take a longer-term view focusing on individual businesses and communities, a different picture may emerge. Deregulation/reregulation will not result in an easily generalized impact for all small businesses or communities--some are likely to benefit, others will remain unchanged. To generalize as to the implications of deregulation serves little purpose: what determines user impacts is whether you are a shipper or receiver--whether you live in a large or small community--whether the community is on or near a major transportation artery or "off the beaten path"--whether you own/operate one type of business or another--whether you have several modes serving you or a single mode.

Regulatory Changes in Rail Transportation

There are a number of regulatory changes resulting from the passage of the Staggers Rail Act that are of interest to rural communities. Perhaps the most extensive changes in regulation provided by the Act are in the provision on railroad ratemaking. While protection for rail-dependent shippers is retained, Congress clearly intends that the competitive marketplace will control most ratemaking. The new rate provisions curtail activities of rate bureaus and move to phase out general rate increases, but also offer a new measure of flexibility in the setting of rates and in the marketing of rail services.

Major changes are also evident in railroad management. Railroads have felt restricted, relative to other businesses, by regulations concerning their business practices and day-to-day management of their companies. The Staggers Act alters some of these restrictions and returns decision-making to railroad management.

The Staggers Rail Act also simplifies and shortens the time and proceedings required for abandonments and mergers.

Implications of Recent Regulatory Trends

Since the passage of the Staggers Act, railroads have pointed to improvements associated with:

- greater use of container and freight cars for back haul of perishable goods
- lower contracted rates
- improved cooperation/coordination in developing longer train routes
- improved car use and service reliability
- individual/tailored rates
- seasonal/special rates
- greater innovation in intermodal cooperation, pricing, and paperwork
- preservation of branch line services that might otherwise have been eliminated through surcharges and shipper/community ownership of branch lines.

All of these improvements, if extended to small businesses, would prove beneficial in the long run. The question is, will the Staggers Act provide these improvements to all or to a select group of businesses or communities? How will the long-term implications of the Act differ from the immediate trends? Will the Act eventually serve as a stimulus for marketing innovation and increased productivity--a world in which trucks, railroad, and airlines become partners in creating an integrated transportation system? Will the long-term implications of the Act result in three or four trans-continental systems with very little trackage off the main line?

After two years of operating experience under the Staggers Rail Act, there is a great deal of uncertainty for the railroads and small businesses with respect to supply sources for receivers and markets for shippers. One such major uncertainty concerns the supply of rail transport equipment available to agriculture. Owing to the current recession, supplies are sufficient; however, an improved economy could change this picture. If grain exports increase in the years ahead, private firms could potentially face service cutbacks and rail-car shortages that create market disruptions.

A second area of uncertainty is what action communities and businesses should take regarding railroad abandonments. Private firms as well as local governments will have to determine whether to subsidize the operation of short-line railroads, switch to other modes, relocate, or terminate business operations.

A third major area of uncertainty surrounds rate-making and contract rates. Owing to changes in routing and joint rates, different rates between origin and destination now exist, depending upon the routing. Also, rates can be changed much more rapidly under the Staggers Act, thereby confronting firms with everchanging rates. These changes, in turn, dictate changes in purchase and selling prices of commodities and changes in the profit and loss column for small businesses. The key, then, for rural communities is determining how changing regulations will affect the transportation modes serving them and predicting how these transportation realignments will impact on the viability of their economy. The more accurately and rapidly a community can assess these impacts, the better off it will be in adopting strategies for

encouraging or mitigating them. As might be expected, each individual community will experience different types and intensities of impacts depending upon size, location, and existing transportation modes.

A review of past studies suggests that there are very few, if any, significant effects on a community's economic growth resulting from railroad abandonments. However, as railroads continue to divest themselves of less profitable lines, this picture may change--recognizing that, to date, railroads have primarily divested themselves of the smallest, least economically viable lines--these lines may not provide an accurate representative sample of the social and economic impacts associated with future rail abandonments.

Rail deregulation also has the potential for less immediate and more indirect impacts (both positive and negative). Current deregulation trends will result in: 1) fewer railroads that will concentrate on longer, more prosperous hauls that are not in competition with other modes; and 2) a greater integration of transportation modes (rail, air, barge, and trucking) that will capitalize on the inherent advantages of all four modes.

With the first of these trends, businesses located in small communities that are not on a main line will eventually experience a drop in rail service or total abandonment. Long haul movements in such bulk commodities as coal, lumber, or grain will dominate. Because of this concentration on long hauls, the need will exist to serve small communities/businesses with other transportation modes. The physical coordination or integration of the services offered by the various modes is clearly a desirable spin-off of deregulation. However, will it occur in a timely manner to pick up the anticipated drops in rail service?

Regulatory Changes in Motor Carrier Transportation

In the past few years, the economic and operating environment of the motor carrier industry has undergone substantial change--change that includes the deregulation of rates, relaxing restrictions on contract and common carrier operating authorities, broadening of the agricultural exemption, and increases in the cost of energy, equipment, financing, and labor. Additional changes include a deteriorating and underfinanced road, highway, and bridge system in most parts of the country, and inconsistencies in state and local weight regulations and enforcement.

The intent of the Motor Carrier Act is to increase competition among interstate carriers. Although the Act is often characterized as deregulation of the motor carrier industry, in fact it loosens certain regulations. In this sense, it represents a "halfway house" to deregulation.

Specifically, the Motor Carrier Act relaxes entry restrictions; but carriers still must show that they are fit, willing, and able to provide services before the Interstate Commerce Commission will grant them any authority. The Act provides individual motor carriers with greater freedom in establishing rates, by allowing a 10 percent up or down zone of rate flexibility within which the ICC may not investigate. However, the commission retains authority to act on any rates which are discriminatory or predatory. Under the Act, rate bureaus still maintain their antitrust immunity in the making of general

rate changes. Other provisions of the Act include pooling arrangements requested by carriers, carriers' freedom to transport in the same vehicle mixed loads of regulated and exempt commodities, easing contract carriers' permit restrictions, and elimination of circuitous route requirements.

Because this Act is a "half-way house," it is likely that the deregulation trend will continue beyond the Motor Carrier Act of 1980. Future deregulation efforts may emphasize:

- simplified tariffs and more individual action in the ratemaking process
- reduced ICC control over tariffs
- additional contract carriers and more situations where carriers have contract-like relationships with shippers
- abandonment of ICC control over motor carrier mergers and the issuance of motor carrier securities
- elimination of most of the remaining controls on the leasing of motor carrier equipment
- elimination of most of the remaining restrictions on private carriers
- uniformity in motor carrier weight and width restrictions.

Implications of Recent Regulatory Trends

To date, changes brought about by the Motor Carrier Act of 1980 are resulting in:

- lower trucking rates due to rate competition
- an increasing number of private companies filing notice of their intent to haul intercity
- an increasing number of owner operators in the trucking industry
- agricultural cooperatives entering interstate transportation for non-cooperative members
- a decline in shipper service complaints (below pre-Motor Carrier Act)
- shippers turning to contract and common carriage, rather than private carriage, as rates and service become more competitive.

For businesses, these changes to date have meant lower shipping rates without a loss in service availability or quality. In many instances, businesses have experienced an increase in services with lower rates and discounts. However, because of the general decline in the national economy since the passage of the Motor Carrier Act, the true effect of the Act on businesses is difficult to assess. Consequently, the question as to what impact the Motor Carrier Act will have on rural communities, both in terms of efficiency and shipping costs, can only be partially answered. There is evidence to suggest that:

- businesses are beginning to negotiate lower rates without a reduction in services with the major advantages going to larger shippers/businesses that have a greater volume
- there is an identifiable shift to actual cost-pricing over routes
- the actual number of motor carriers is increasing; the greater share of these are non-union. Consequently, deregulation has weakened the Teamsters Union (a loss of 100,000 members to date). Union drivers are also renegotiating wage contracts that are lower but that provide for job security
- many of the new carriers are serving smaller communities
- many marginal carriers are being forced out of business due to financial difficulties

- small shippers are not realizing the benefits of deregulation that the larger volume shippers are. ICC figures show that, to date, rate increases for shipments of less than 500 pounds have ranged from 12 to 24.8 percent since the law was passed, while many larger shippers have actually experienced a rate reduction during this same period.

Given this evidence, businesses located in rural communities might generally expect improved motor carrier service in the short run, although not necessarily at a reduced rate. In the longer term, however, the current reduction in shipper profitability may force many carriers out of business. This is likely to result in fewer, but larger, carriers serving smaller communities/businesses. This, in turn, would result in less carrier competition which could lead to both higher rates and less service for communities/businesses.

To date, the changes attributable to the passage and implementation of the Motor Carrier Act of 1980 are generally positive for virtually all businesses and communities. It is important, however, for businesses that are not located on or near major trucking routes to recognize that with the shift to actual cost-pricing over routes and a potential reduction in competition in the long term, their shipping costs may rise relative to businesses more favorably located.

Moreover, small shippers generally have not gained the benefits of deregulation that larger shippers have. Small shippers simply don't have the bargaining power or the available expertise (in bargaining and negotiating) that larger shippers have. These two disadvantages affecting rural communities and smaller businesses are likely to reduce their long-term competitiveness.

In addition, the current competition between trucking firms (resulting in lower shipping costs) is forcing firms to forgo long-term capital improvements. This, in turn, will likely result in less service with poorer quality equipment to rural communities.

One of the major changes that will occur as a result of deregulation is greater shipper interest in transportation as an integral element in the profit and loss picture. This will result from higher energy prices, higher shipping costs (relative to other costs), and the the opportunity to achieve a competitive advantage through shipping negotiations. As a result, shippers will place greater emphasis on shipment consolidation and planning, a reduction in large inventories and shipment frequencies, and a movement toward streamlining transportation operations, including greater use of intermodal systems and use of transportation brokers.

Regulatory Changes in Air Transportation

Throughout the 1950's and most of the 1960's, the airline industry experienced rapid growth and technological change. During this period, the industry was relatively prosperous. However, in the late 1960's and early 1970's, growth slowed and profits declined. This turn of events created pressures for substantial fare increases which ultimately forced the Civil Aeronautics Board (CAB) to undertake, for the first time in history, a thorough and systematic

investigation of domestic air fares. Following this investigation, the realization grew that CAB regulation of routes and fares had created serious distortions in industry service levels and costs. A substantial body of evidence suggested that the industry would perform better under free market competition rather than under any modified form of regulation. This ultimately led to passage of the Airline Deregulation Act.

The 1978 Airline Deregulation Act contains the following major provisions:

- shifts the burden of proof in route authority cases from the need for a positive showing that entry meets public convenience and necessity to a showing by opponents that entry is inconsistent with public convenience and necessity.
- provides for a limited degree of automatic entry, which requires no Board review or approval
- allows carriers to apply for and obtain dormant route authority; that is, authority that was not being used by the airline holding the certificate
- sets a statutory zone of reasonableness for fares
- provides for a new Essential Air Service Program intended to replace local service subsidies, and establishes notice procedures for airlines wishing to terminate service at a community.

Implications of Recent Regulatory Trends

Immediately following deregulation, the falling real cost of air travel, the high rate of growth in traffic, the expansion of air service, and high airline profits seemed to be sufficient evidence to conclude that deregulation was a success. However, these statistics were far less favorable in the last quarter of 1979 and throughout 1980, 1981, and 1982. The sudden deterioration in traffic and profits has raised the question of whether the success of deregulation was ephemeral.

Pricing and entry freedom afforded by deregulation has permitted three significant developments that have fundamentally changed the industry. These developments are:

- a closer match of the quality of service and air fares with market demand.
- substantial entry by trunk and local carriers into new routes, and rapid growth of commuter airlines to replace the major carriers in small communities
- a loss or reduction of airline service to many small communities

It is likely that air transportation will undergo major changes in the 1980's and '90's owing principally to changes in the regulatory environment and the evolving needs of users. With regard to freight movement, it will be a time of market segmentation and market specialization. A number of air carriers are likely to move toward vertical integration, including operating their own truck lines, even combining airlines, trucking companies and railroads, and handling general freight as well as small parcel delivery business. Other air carriers may specialize in overnight small parcel delivery business. Still others will move to full-service general freight delivery--specializing in air service but developing close ties with rail and trucking service. From a community perspective, these trends should result in improved door-to-door service involving multiple modes of transportation with considerably less logistical requirements being placed on the shipper. For smaller communities these innovations may mean that direct commodity air service will be replaced

by truck-air service or other combinations of indirect air service. Communities and small businesses should recognize that combinations of multiple mode transportation could actually result in higher levels of service and reasonable prices (when compared to direct air service).

Regulatory Changes in Water Transportation

With the passage of the 1978 Inland Waterways Revenue Act, Congress established a fuel tax on commercial users of inland waterways through 1985. Under terms of the Act, users began paying four cents per gallon on October 1, 1980. In 1981, this tax rose to six cents per gallon; in October, 1982, to eight cents; and it will rise to 10 cents in October, 1985.

The intent of this Act is to provide for a proper mix of taxes and fees to:

- reflect actual use of the waterway
- encourage economic efficiency and reduce the cross-subsidization of high cost waterways.

From a financial perspective, the law will increase the use of water transportation fees to the users in direct proportion to the actual cost of serving that user.

Implications of Recent Regulatory Trends

The U.S. Army Corps of Engineers estimate that improvements to ports and inland waterways will require \$40 billion in the next decade. The Corps anticipates that user fees will pay for the greater share of these costs. If the implementation of the Inland Waterway Revenue Act of 1978 results in segmented taxes as opposed to systemwide taxes, the major impacts will occur to communities/businesses located on high-cost rivers (e.g., the Kentucky) or in upriver segments of river systems that have lower traffic volume and, therefore, higher costs per unit shipped. Increasing costs relative to other producing areas and businesses place these communities/businesses at an economic disadvantage. Conversely, a system-wide toll structure that equalized payments across river segments/communities will result in traffic on low-cost rivers paying higher tolls and, in effect, cross-subsidizing business operations on high-cost segments.

A higher waterway toll will result in rate increases on such bulk commodities as grain, petroleum products, coal, fertilizer, and ore. It is likely that these, in turn, will be passed through to consumers. However, the full impact of an increasing waterway toll will depend on how other competitive modes react to these increases. Although water carriers do compete with other water carriers, most competition exists between water carriers and other modes (primarily pipelines and rail). Consequently, the financial impact on a community/business will depend, in part, on the rate adjustments of the other modes to the tax imposed on water carriers.

For businesses now served by water carriers, the long-term question is one of service and cost. Will the rate increases reduce the competitiveness of water carriers and ultimately lead to a reduction in service? Or will the pipelines and railroads see this as an opportunity to increase their rates, thereby resulting in continued community service of all modes, but at higher rates for users?

A recent study conducted at the University of Illinois Department of Agriculture reveals that the higher fees on inland waterway traffic eventually will have an adverse economic impact upon agricultural groups. The researchers also noted that the user tax would negatively affect investments in port facilities as well as growth in capacity at river loading points and at export elevators--new investments in these facilities will come more slowly and facilities will lose capacity relative to growth in other areas.

Transportation Forecast

Clearly, transportation deregulation/reregulation is an evolutionary process and, as such, will continue to change. Anticipating or predicting these changes is complicated by current events such as recessions, the political process, and the interactive nature of the transportation modes. Yet, change is inevitable with most transportation experts long recognizing the inadequacies of the "old" transportation environment.

Even at these early stages of deregulation and federal budget reductions, it is evident that to generalize as to the impacts serves little purpose--what influences the impacts of deregulation on a business depends on whether that business is located in a large or small community; whether it is near a major traffic lane or "off-the-beaten path"; whether it has available several options or a single mode.

For these reasons, the following pages provides a synthesis of an ever-changing future. This synthesis is a "collective best-guess" based on a review of surveys, studies, projections, and articles from a wide range of academics, practitioners, lawyers, etc., writing on deregulation since its genesis. It is not intended as a definitive statement on deregulation impacts, but rather to be thought-provoking, designed to alert, sensitize, and provide direction to community and business leaders.

Modal Trends as a Result of Deregulation/Re-regulation

Listed according to mode, the trends identified below are summarized from the foregoing pages and, in some cases, represent assumptions about the future.

Rail

- larger but fewer major national railroads
- trend toward longer hauls, profitable markets
- trend toward unit trains
- concentration on bulk products/mass volume
- greater intermodal cooperation/networking
- formation of shipper associations/groups/cooperatives to negotiate rates
- reduction in rail terminals
- continued service abandonments on marginal/remote lines
- increased profits for railroad

Motor Carrier

- influx of motor carriers, followed by a reduction in motor carriers (long-term trend toward fewer but larger trucking firms)
- major carriers will provide a wide range of services
- greater intermodal cooperation/networking
- greater number of multimodal companies
- improved efficiency (backhauls, piggybacking, etc.)
- greater dependence on motor carriers in small, rural communities
- reduction in profits for trucking firms in short run due to competition
- increased profits for trucking firms in the long run
- larger trucking companies will increase their aggregate share
- greater trucking innovations and improved management practices
- development of trucking rates that closely reflect actual costs
- deteriorating transportation infrastructure

Air

- reduction in profits in short term due to competition from competing airlines
- increased profits in long term due to less competition and selected routing and scheduling
- reduction in major airline service and convenience to small, rural communities--concentration on major hubs
- increase in commuter airlines (trunk airlines) serving small, rural communities
- greater intermodal cooperation/networking
- trend toward airline freight specialization
- development of rates reflecting actual cost

Water

- increases in rates to reflect actual costs of waterway maintenance
- reduction in and/or selected services on high-cost waterways

Clearly, the above-noted trends will not suddenly emerge one day; rather, they are developing gradually because of the intent of Congress and the regulatory agencies, as well as the long, complicated chain of actions and reactions associated with a large, highly complex transportation network. This gradual period of development will tend to spread out and mitigate the effects of the deregulation.

User Impacts of Modal Change

These modal trends, as a result of regulatory and policy changes, will, in turn, impact communities/businesses in a variety of ways. It should be emphasized that these are collective impacts and are not associated with an individual mode.

Business/Industry (Shippers)

- higher shipping cost if located in small rural areas (especially for less-than-truckload service)

- lower cost if located in heavily populated, accessible areas on major transportation arteries
- reduced service to shippers in small, rural areas
- improved service to shippers in heavily populated, accessible areas
- rate uncertainties unless long-term contracts are negotiated

Business/Industry (General)

- increased cost for incoming commodities shipped by rail, e.g., fertilizers
- regional price disparities for incoming commodities that will provide a competitive advantage to some and a disadvantage to others
- higher shipping cost for out-going products
- reduced options for shipping out-going products
- uncertainty over shipping costs owing to rate change flexibility
- increase in use of cooperatives and associations to negotiate long-term shipping services and prices

Although small businesses in rural communities removed from major transportation arteries will likely experience a reduction in service levels and fewer transportation options, the end result is not likely to be a financial disaster--if reductions are anticipated and planned for.

Transportation changes are inevitable. Through intermodal cooperation, use of brokers, formation of shipper cooperatives, improved management practices, and greater competition within modes, costs and services will be kept manageable; nevertheless, disparities will result.

There have always been regional price differences, and these difference will continue to exist with more or less regulation. All transportation modes are subsidized to some degree with tax monies. The current trend toward deregulation will somewhat reduce this direct subsidy for such items as road building and lock and dam construction and maintenance. On the other hand, taxpayers will continue to support the transportation infrastructure through the added cost of consumer goods or user tax on fuel. Consequently, one form of financing the construction and maintenance of our transportation system will be substituted for another. Overall, deregulation will influence the types and levels of service available (especially to businesses located in rural areas that are not adjacent to major transportation arteries) and what transportation modes and individual transportation companies will gain or lose. Clearly there will be greater company freedom in making this choice. The principles of private enterprise will prevail.

From the perspective of a rural community, a reduction in transportation services and the potential of a relatively higher rate structure will not necessarily force existing businesses to close or reduce options, but it will produce a barrier to future economic development. Expressed in another way, the attractiveness of rural communities to business and industry will be reduced. Many businesses and industries dependent upon a high level of transportation service will tend to locate in areas where such services exist or can be developed easily. There are, however, businesses and industries that are not as concerned with the level of transportation services, and it is likely that they will not exclude small communities/rural areas from their expansion/relocation consideration. Over time, this could lead to a spatial separation of businesses and industries according to their dependence on transportation services.

For communities, the changing transportation environment offers uncertainties as well as potential opportunities. Of immediate importance to small businesses is continual monitoring of the health of their community's transportation system. Of equal importance is the need to elevate the status of goods movement and storage/rate negotiations within their management scheme. Change is inevitable. It can be challenging if we plan for it.

Motor Carrier Questions of Interest
to Rural Communities and Small Businesses

- Will there be fewer but larger carriers serving communities? If so, will this, in turn result in less carrier competition and higher rates and less service?
- Will smaller businesses bargain for the same rates that larger businesses can?
- Are specialized carriers offering generalized cargo freight sources? Are the small distribution cartage companies offering LTL services?
- Are there more or less "small" truckload and LTL carriers? How will the industry shake out concerning the number of firms?
- Are relaxed ease of entry and other regulatory changes causing not only inefficient carriers but also some profitable, well-managed carriers to call it quits?
- How to you classify:
 - size of shipper?
 - size of community?
 - urban versus remote shippers?
- What factors bear on the degree of service offered to a community: i.e., population, regional geographic, concentration, proximity to major traffic lane(s), commodity mix?
- What are long-term responses concerning equipment availability?
- Do "community" shipper associations face potential antitrust problems?
- Concerning rate-making, is there more tailor-made, creative rate-making occurring?
- Are discounts and incentives here to stay?
- Has predatory pricing, pricing to kill competition, and pricing to create monopolies been experienced in the industry?
- Are rate "wars" prevalent as experienced in a highly competitive, free market?
- Have carriers experienced a realignment of resources and internal organizational structure; i.e., shifting of dollar expenses and personnel toward more sophisticated marketing of services?

- To what degree have shippers expressed a "carrier loyalty" in the new environment? Is this "loyalty" strong or weak?
- Where do "abused" shippers go to complain about bad carrier services or high rates?
- Do shippers check on the legality, insurance, and viability of carriers offering services?
- Are carriers spending more time explaining liability and claims policies and procedures?

Rail Questions of Interest
to Rural Communities and Small Businesses

- Will the Staggers Act provide improvements to all communities equally? If not, to which communities/businesses will it provide improvements?
- How does the short term differ from the long term?
- Will the Act result in an economically viable rail system that meets national needs?
- Will railroads strive for greater cooperation with other modes to form an integrated transportation system?
- Will agriculture be adequately served by rail during times of an improved economy?
- Will rapid rate changes create problems for small businesses?
- How will changes in rail transportation affect communities of different sizes, communities in different geographical settings, and communities having access to different levels and types of transportation?
- Will railroads close lines that currently show a profit?
- Will other modes fill the gap created by rail abandonments? Will the gap be filled in a timely manner?

Water Transportation Questions of Interest
to Rural Communities and Small Businesses

- Will higher waterway tolls be passed on through to consumers or be absorbed by shippers or farmers?
- Will differences in waterway tolls favor some river systems over others?
- Will other modes serving river communities/businesses increase their rates to match higher waterway tolls?
- Will water carriers remain competitive?
- Will higher tolls impact on certain economic groups more than others?

FLORIDA MOTOR CARRIER DEREGULATION:
THE IMMEDIATE EFFECT OF SUDDEN DEREGULATION FROM THE PERSPECTIVE
OF SHIPPERS/RECEIVERS IN SMALL COMMUNITIES

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The results have been presented to the U.S. Congressional Motor Carrier
Ratemaking Study Commission and the American Trucking Associations, Inc.

I. Introduction

On July 1, 1980, the "sunset" on the Florida Public Service Commission's authority to regulate intrastate motor carriers. Since the mid 1930's motor carriers had been subject to full economic regulation regarding entry, certification, routes, and rates. Thus, economic deregulation in Florida was complete and total.

This paper reports on the consequences of deregulation in selected small communities in Florida from the perspective of shippers/receivers approximately one year after deregulation. The impact on prices, competition, service quantity and quality is assessed. The emphasis on small communities, rather than some cross sectional sample of all size towns, was principally determined by (1) the importance of the "small towns issue" in the national deregulation debate, and (2) our wish to provide findings of interest to Congress as it requested in section 28 of the Motor Carrier Act of 1980. Congress required the ICC to conduct a full investigation of motor carrier service to small communities, with emphasis on communities with populations of under 5,000, and to report its findings by September 1, 1982. Thus, this study, funded by the American Trucking Associations, is an attempt to provide evidence on the impact of deregulation on just small communities. Many other deregulation issues (e.g., safety, collective rate making, anti-trust immunity) are not addressed here.

The paper is divided into four following sections. Section II describes the methodology and data, with emphasis on community selection, and respondent selection and profile. Section III describes the questionnaire administered. Section IV contains a summary of the major findings and Section V contains summary and implications of the study.

II. Methodology and Data

Community Selection

Our study defines a small community in terms of the following characteristics:

- population of under 5,000 in 1979
- at least 10 miles from an interstate highway
- at least one manufacturing establishment

Thus, a small community is defined in terms of population, distance from major traffic lines, and a minimum heterogeneity of industry. This definition conforms to that given in section 28 of the Motor Carrier Act of 1980. The selection criteria focuses on the most isolated communities and those with a potentially heterogeneous, nonmonopsonistic demand for common carrier services. It is important to emphasize that such communities are probably the most likely to be adversely affected by deregulation. Adverse effects are defined in terms of both price increases and service deterioration, measured quantitatively as well as qualitatively in a variety of ways. While the findings will be most relevant for communities with similar characteristics, we think reasonable inferences can be made, with caution, to all small communities in Florida. Florida, in 1980, had 47.9 percent of its population living in communities (both incorporated and unincorporated) of under 5,000 persons.

Extrapolation of sample findings to a broadened universe is, of course, an imprecise and risky business. Given, however, that our sampled communities represent those towns most likely to be adversely affected by deregulation, the findings from the sampled towns can be reasonably extrapolated to all Florida small communities as follows:

<u>Sample Findings</u>		<u>All Florida Small Communities</u>
Negative (e.g. Price Increases and Service Deteriation)	-----	Negative Overall Impact
Mixed	-----	Inconclusive Overall Impact
Positive (e.g. Price declines and Service Improvement)	-----	Positive Overall Impact

Using a Community Data Base recently compiled by the Florida Department of Commerce, 38 incorporated communities were identified as having populations under 5,000 and also at least one manufacturing employer. We choose the three communities of Apalachicola, Green Cove Springs and Mulberry because they meet the three criteria defining a small community. The population, number of manufacturing establishments, and miles from the nearest interstate highway for each community surveyed is as follows:

<u>Town Surveyed</u>	<u>Population</u>	<u># Manufacturing Establishments</u>	<u>Miles from an Interstate</u>
Apalachicola	2,540	10	80
Green Cove Springs	4,163	7	14
Mulberry	2,939	10	10

The community profile of the study was developed to allow the research team to examine each potential community to determine its transportation needs by considering factors such as: (1) economic base (manufacturing, construction, retailing, wholesaling/distribution, or other services, and agriculture); (2) employment and number of establishments; (3) sales volume; (4) origin or destination of shipments; (5) shipment volumes; (6) average transportation costs by carrier types; and (7) quality of transportation received. The choice of small communities rather than traffic lanes or trips also allows the research team to thoroughly "tear the town apart and put it back together."

Respondent Selection

Respondents in each community were chosen on the basis of their importance in the local demand for trucking services, except for Mulberry where the selection covered a range of all size shipper/receivers. Major users of trucking services were identified by several means :

- From the Community Data Base provided by the Florida Department of Commerce. The major employers in each community were available from this source.
- Contacts were also made with each community's Chamber of Commerce, industrial development authority, or regional economic planning commission.
- Once the interviewing process began with firms selected, further shipper/receivers were identified by leads from respondents.

A diligent attempt was made to identify shipper/receivers in the selected communities. The process was not a random selection. All the shipper/receivers were users of general commodity motor carriers.

The distribution of the respondents by type of industry--retail, wholesale, or manufacturing/mining--is:

<u>Industry</u>	<u>Apalachicola</u>	<u>Green Cove Springs</u>	<u>Mulberry</u>	<u>Total</u>
Retail	2	0	6	8
Wholesale	4	0	3	7
Manufacturing/Mining	<u>2</u>	<u>6</u>	<u>7</u>	<u>15</u>
Total	8	6	16	30

Greater attention was focused on manufacturing shipper/receivers rather than retail or wholesale because the most significant impacts were anticipated in manufacturing.

Finally, and equally important, was the selection of the actual persons interviewed. Prior to the interview, attempts were made to identify the principal person responsible for each firm's shipping/receiving. With small firms, this tended to be the owner/manager. With larger firms there were sometimes purchasing, warehouse, or plant managers. Telephone calls preceded the interviews in order to establish specific appointments and also further identify the most knowledgeable traffic authority in the firm.

Shipper/Receiver Profile

Respondents to the study of the shipper/receiver questionnaire displayed a cross-section of manufacturing, mining, and distribution (wholesaling and retailing) activities. Each of the three small communities examined differed depending upon the individual topography of that section of Florida, the extent to which local carriers existed to fill needs, and economic structure.

Our study provided a cross-section of users, with companies interviewed being in business from less than one year to over 70 years and having sales volumes ranging from \$250,000 to \$20,000,000 annually. The number of employees ranged from 4 to over 100 and several respondents, over half, reported other locations in Florida. The percent of transportation cost to total costs ranged from one percent to 20 percent; however, the majority of those reporting showed five percent or less (see Table I).

III. DESIGN OF THE QUESTIONNAIRE

Some of the distinguishing, general features of this shipper/receiver questionnaire include:

1. the ability to gather indications on satisfaction as well as actual change;
2. the maximum possible concentration on totally deregulated, Florida intrastate traffic;
3. cross-checks within the shipper/receiver questionnaire;
4. personal, in-depth interviews;
5. a categorization of the traffic to general commodity and the characteristics of the shipment and of the shipper/receiver;
6. an attempt to determine the sensitivity of a shipper/receiver to transportation costs; and,
7. an extremely careful selection of the communities and the shipper/receivers.

The questionnaire solicited the shipper/receivers' level of satisfaction as well as the changes in rates and service experienced. The ability to detect satisfaction was felt to be an important insight since it is possible to have a change in rates or service without changing the shipper/receivers' level of satisfaction.

There are various categories within the questionnaire. Only general commodities, the majority of traffic, shipper/receivers were interviewed. The shipping environment was thus concentrated so that data noise from other environments would not cloud the observed tendencies. The questionnaire concentrated on LTL, but other types of shipping environments such as small parcels, TL, shipment size, shipper/receiver industry and size, use of only

previously certified carriers in general commodities, traffic direction, etc. were incorporated into the questionnaire. The questionnaire was extensive, covering twelve pages, and was administered by a member of the research team.

IV. OBSERVATIONS ON SHIPPER/RECEIVER RESPONSES

A total of thirty (30) responses was obtained. Of those thirty, seven (7) responses were totally invalid because of the limited data, unwillingness, or inability to provide accurate responses. Another three (3) respondents had no intrastate inbound or outbound traffic, thus the impact of Florida deregulation is not applicable. Still, three (3) more respondents had minimal intrastate traffic, although we did examine their responses. Seven (7) respondents not included in those already cited provided incomplete information on several questions for various reasons. At this time, twenty (20) respondents form the data.

Data collected from the study indicate that the immediate impact of sudden deregulation has been little change and some confusion. The preponderance of responses indicating no change, the contradictions within the responses, and the general comments of the respondents lead to that conclusion.

Preponderance of No Change Responses

The preponderance of no change responses to most of the questions was the most striking feature gathered from the respondents (see Table II). This was observed on questions assessing both service and price (rates) impact.

Services

The mode of transportation available for shippers/receivers remained basically unchanged. The questions pertaining to change in motor common carrier service frequency not only had a vast majority reporting no change, but was also relatively evenly split between those respondents who thought the frequency had increased and those that the frequency had decreased.

Little change among common motor carrier types was uncovered. Fourteen (14) respondents reported no change, four increased their use of common motor carriers (two of the four at the expense of private carriage, one substituted private carriage as well as common motor carrier for rail, and one substituted both common motor carriers and UPS for private carriage), one switched almost exclusively to UPS, and one had no response.

We had anticipated that one of the earliest indications of change under deregulation would occur in the reported number of common motor carriers serving the respondents. Yet, eight (8) respondents reported no change in the number of carriers serving them, while six reported an increased number. Four reported a decreased number and two had no response.

The responses to the combined questions on new services offered or eliminated also found a preponderance of no change. The responses totaled forty because each respondent had the opportunity to provide two answers. Twenty-two (22) usable responses reported no new or eliminated services. Ten did report increased services (although one was clearly referring to an interstate situation), six reported decreased services and two had no response. The elimination of carrier service was not frequently encountered and no shipper/receiver was left without service entirely even if one or two of the carriers that previously served dropped out.

The same pattern of no change in the level of satisfaction was observed in availability of service and in the shipper/receivers' answers on their satisfaction with the frequency of service. The level of satisfaction with on-time service had not changed for the majority of the respondents. However, five said on-time service had actually increased, while four reported that the percentage of on-time had actually decreased from the regulatory environment which existed before July 1, 1980.

The ease with which service could be engaged also showed that most respondents had no change in their level of satisfaction. Similarly, consistent satisfaction with loss and damage experience was expressed by the majority of respondents. The loading and unloading experience between the two periods for the respondents showed an almost identical satisfaction with the intrastate service between the two environments. There was also a preponderance of no change in the shipper/receivers' claims problems.

Prices

Despite the lack of uniform intrastate tariff publication, eleven (11) respondents claimed they had no change in their ability to get carrier rate information in advance. One claimed more access, four claimed less access primarily because of the discontinuation of the general tariff publication, two had no response, one had gone to negotiations as a matter of policy in most instances by which to determine rates, and one had shifted emphasis from published tariffs to negotiated rates although still using carriers as a source of information. The majority of shipper/receivers which reported no change still relied on the carriers to provide the tariff information. One, with little intrastate traffic, had gone almost exclusively to prepaid. Three had continued to rely on experience. Several still

relied on published tariffs apparently provided by the carriers. We doubt those who are relying on experience could continue to do so in a fluctuating rate environment. Further, many of those expressing no change in the availability of rate information were not yet aware that they were not being quoted from uniform tariffs. These shipper/receivers apparently thought they were still being quoted from the same source. A limited and unequal dissemination of rate information has occurred.

The questionnaire also elicited responses of satisfaction or dissatisfaction to the changes which had occurred. In fact, fifteen (15) of the respondents reported that they had no change in their degree of satisfaction with the rates now charged compared with those charged under regulation despite that eight reported rates had actually increased. None reported that they were satisfied with the rates under deregulation despite that seven reported rates had decreased. There may be an asymmetrical bias whereby rate increases are more likely to elicit dissatisfaction than rate decrease are to elicit satisfaction. Only two respondents reported dissatisfaction with changes in the rates despite the fact that eight had reported rate increases. Three had no response. The preponderant response was no change. The observed shifts do not seem to have been either dramatic enough to have caused concern or to have had time to be digested for their impact.

The questionnaire also attempted to determine if the weight of the shipment was associated with any particular alteration in the service level since deregulation. Three reported increased service among the various weights; seven reported decreased service, especially in the smaller weights.

The incidence of carrier solicitation for new business seems to be one area where change did occur between the two environments. Thirteen (13)

shipper/receivers reported that they had been approached by carriers for new business. Five reported that they had not been approached. Two did not respond. Specific indications were that three of the soliciting carriers were interested primarily or only in northbound traffic, two were interested mainly in heavier loads, and one was mainly concerned with inbound bulk. No clear distinction between solicitations from newly formed carriers, from existing carriers new to the area, or existing carriers expanding in the area was obtained.

When the respondents were asked if they had dropped, at their initiative, any common motor carriers which they had previously used, fifteen (15) responded that they had not dropped any carriers on their own initiative. The respondents appeared to have a difficult time in isolating the specific percentage change in rates for various shipment weights. Five reported decreases ranging from 5 percent to 11 percent. One had decreases in northbound, but increases in southbound shipments. These decreases were irregularly scattered throughout the six different weight categories. Six reported increases, mainly in the 15 percent range, scattered throughout the six weight categories. Seven had no response, and one had no change in any of the weight categories.

The question in which we elicited the respondents' overall experience with changes in rates and service since deregulation allowed for more than one answer. For example, a respondent could say rates had increased and service had increased. Seven answered that service had increased, while five answered that service overall had decreased.

Eight (8) respondents said rates had increased, while seven responded that rates had decreased. Four reported no change, while three responded that they did not really know what the overall change had been in service and rates since deregulation.

Contradictions

We frequently observed contradictions between the respondents' indication of satisfaction and their comments on actual changes in rates and service. Shipper/receivers apparently can be satisfied even if service has decreased. Conversely, they can be dissatisfied even if service increased.

The observed actual changes since deregulation were often contradictory. Two Green Cove Springs shipper/receivers responded improved service at lower rates, while one Green Cove Springs shipper/receiver reported decreased service at lower rates. One Apalachicola shipper/receiver reported both increased and decreased rates, which we interpret as a sign of adjustment to the new environment differing among freight class and/or commodity.

Contradictory differences among shipper/receivers in the same community and certainly among communities in response to overall changes in rates and service existed. In Apalachicola, three respondents reported increased service, while two reported decreased service. In Green Cove Springs, two respondents reported increased service, while another two reported decreased service. These latter two were considering relocation because of the reduced service. Both were particularly concerned about a loss of single-line service. Their production schedules were suffering as a result because interline service generally took longer. Both commented that unless they found additional capital to carry more inventory, they would relocate to larger metropolitan areas in order to receive better motor cartage. In Mulberry, two respondents reported increased service, while one reported decreased service.

We observed the same contradictory responses on rates. In Apalachicola, five respondents reported increased rates, while one reported rates both up and down. In Green Cove Springs, one reported increased rates, while four

reported decreased rates. In Mulberry, two respondents reported increased rates, and two reported decreased rates.

Respondents' Comments

Respondents' statements were often contradictory and show the general state of flux in which the intrastate, Florida market found itself after the abrupt deregulation. One hardware store in Apalachicola said "some better some worse" when referring to service changes. One seafood processor in Apalachicola said, "don't pay much attention to rates just pay." Another seafood processor in Apalachicola said, "feel no real change in intrastate." A container manufacturer in Mulberry found "fewer carriers to Miami," while a pump and mine equipment supplier in Mulberry found "more people in trucking" and an auto parts distributor also in Mulberry found "more carriers." A roofer in Green Cove Springs found "more specialized service offered," while a soda distributor in Apalachicola found that "carriers won't unload." A phosphate operator in Mulberry found "greater openness on rates, and reliability," while a metal container manufacturer in Apalachicola found "higher, less reliable rates," and a seafood processor in Apalachicola found "harder to get rate information." Another seafood processor in Apalachicola summed it up: "admittedly confused."

V. SUMMARY AND IMPLICATIONS

The general impression is that the immediate shipper/receiver response to sudden deregulation has been little change and some confusion. Shipper/receivers simply do not instantly readjust procedures ingrained over 45 years on an abrupt, sweeping legislative change for which there was no assurance of continuity.

Many of the respondents were smaller shipper/receivers who did not have specialized transportation departments or experts within their organizational structures. The respondents frequently wore many hats, shipping just being one of them. Some did not have ample time, training or familiarity with the prior uniform tariffs to know quickly where changes had occurred, no less to experiment with or even systematically analyze the changes they were cognizant of.

The information on new rates and services did not flow profusely. The discontinuation of the central uniform tariff made it more difficult for some to gather rate information, as we have heretofore observed in the responses.

All parties appeared to be cautious, adopting a wait-and-see attitude, at this stage. The process of information exchange, experimentation, and of markets in general where prices are set through probing interaction had barely begun.

We did observe some tendencies which we believe would not have occurred without the advent of deregulation. We observed a few carriers willing to enter the northbound only traffic lanes for relatively lower rates. These carriers were apparently covering empty, northbound backhauls, which is a mark of the Florida traffic pattern, for just "gas money" as one carrier phrased it. We do not know how long these relatively low northbound rates will hold. We suspect not very long. We are concerned that reoccurring, intermittent rate wars on the northbound lanes could potentially erode the stability of the underlying intrastate, common motor carrier infrastructure. Periodic invasions of the out-of-state carriers at "gas money," northbound, backhaul rates could discourage any intrastate carrier from including those lanes in its permanent route structure. When the temporary service stopped,

all service might have stopped as well until the next cycle. Of course, it may not. The relatively low northbound, "gas money" back-haul cost based rate may be a permanent fixture.

Southbound service from Central Florida was reduced. Several of the shipper/receivers were beginning to talk about Miami as an isolated community with limited service. There were, on the other hand, one or two carriers which increased their southbound service to Miami. One established a new terminal there. The increase in the southbound rates to Miami did appear among the largest observed.

Rate negotiation and shuffling among carriers by shipper/receivers appears to have begun. No pattern has yet developed.

We also observed variation among the three small communities sampled. In Apalachicola, all the respondents reported increased rates. In Green Cove Springs, four of the five respondents reported reduced rates. In Mulberry, two respondents reported increased rates; two others reported decreased rates. The observations at this point are inconclusive; but as the remoteness of the community increased, the proportion of respondents reporting change seemed to increase. In Apalachicola, for example, the most isolated community of the three, a greater proportion of rate increases was reported than in the other two communities.

The dissemination of rate information among shipper/receivers appears unequal. There is the potential within this limited access information environment that unequal negotiating strength among shipper/receivers could promote further contradictions in rates among similarly situated shipper/receivers.

A few of the larger shipper/receivers appeared more receptive to the deregulation than the medium-sized shipper/receivers. At least one larger

shipper/receiver mentioned a relatively high number of new services with reduced rates. Conversely, at least one medium-size shipper/receiver had such poor service, which it blamed on deregulation, that it was seriously considering legal action after getting little satisfaction from discussions with the carrier and the state agency designated to receive consumer complaints.

In sum, deregulation of intrastate trucking in Florida has resulted in few immediate changes from the perspective of the shippers/receivers in small towns. No overall pervasive trends regarding service or rate changes due to deregulation are apparent. The short-term impact appears to be non-extreme, confirming neither the ex ante pro-deregulation forecasts of competitive Elysium nor the pro-regulation predictions of disaster.

TABLE I
SHIPPER/RECEIVER PROFILE OF SURVEYED RESPONDENTS

Product	(Yrs.) Age of Business	\$ Sales		Number of Employees	Other Locations in Florida	% of Product Cost is Transport Cost	Total Transport Bill (est.)	
		1980	1979				1980	1979
Brake Repair	9	350,000	270,000	5	0	2	23,000	12,000
PVC Pipe Manuf.	16	20,000,000	20,000,000	65	0	3	1,200,000	1,100,000
Metal Molding Manuf.	55	6,300,000	5,900,000	45	0	5	N.A.	N.A.
Roofing Products Manuf.	3	7,200,000	7,000,000	32	0	4	539,000	505,000
Retail Hardware	72	N.A.	N.A.	4	0	10	N.A.	N.A.
Retail Hardware	35	350,000	325,000	4	1	N.A.	N.A.	N.A.
Marine Supply	9	N.A.	N.A.	5	0	N.A.	5,000	5,000
Metal Cans	13	250,000	N.A.	6	0	20	45,000	N.A.
Hospital Supply	8	4,100,000	3,100,000	25	1	8	320,000	310,000
Seafood Wholesaler	30	10,000,000	9,000,000	100	1	2	N.A.	N.A.
Seafood Wholesaler	9	3,000,000	2,800,000	20	0	5	N.A.	N.A.
Retail Flower Shop	25	150,000	N.A.	4	1	3	N.A.	N.A.
TV Cable	6	N.A.	N.A.	8	1	14	N.A.	N.A.
Pump Repair	12	N.A.	N.A.	52	1	3	N.A.	N.A.
Auto Repair Garage	11	N.A.	N.A.	N.A.	1	N.A.	N.A.	N.A.
Electric Supply	1	N.A.	N.A.	N.A.	0	N.A.	N.A.	N.A.
Brick Refractory	18	N.A.	N.A.	N.A.	1	N.A.	N.A.	N.A.

TABLE 1
(continued)

SHIPPER/RECEIVER PROFILE OF SURVEYED RESPONDENTS

Product	(Yrs.) Age of Business	\$ Sales		Number of Employees	Other Locations in Florida	% of Product Cost is Transport Cost	Total Transport Bill (est.)	
		1980	1979				1980	1979
Phosphate Supply	7	N.A.	N.A.	10	1	N.A.	N.A.	N.A.
Retail Restaurant	3	150,000	N.A.	8	1	N.A.	N.A.	N.A.
Seafood Wholesaler	20	10,000,000	N.A.	12	0	1	N.A.	N.A.
Shoe Manuf.	65	1,050,000	900,000	55	0	3	38,900	N.A.
Soft Drink Manuf.	74	500,000	450,000	5	0	5	5,000	5,000
Phosphate Mining	40	N.A.	N.A.	N.A.	1	N.A.	N.A.	N.A.
Distribution of Motor Parts	62	4,000,000	N.A.	110	N.A.	5	N.A.	N.A.
Foam Containers	11	3,000,000	N.A.	40	1	8	175,000	N.A.

Note: Five respondents unwilling to give this information.

TABLE II
STUDY OF TRUCKING DEREGULATION IN FLORIDA
SHIPPER/RECEIVER RESPONSES

	<u>Mode</u>	<u>Service Frequency Inbound</u>	<u>Service Frequency Outbound</u>	<u>Motor Carrier Type</u>	<u>Number of Carriers Serving</u>	<u>New or Eliminated Services</u>	
Increase (or Change)	2	-	-	4	6	10	
Decrease (or Eliminated)	-	3	1	-	4	6	
No Change	14	15	14	14	8	22	
No Response	4	2	1	1	2	2	
Other	-	-	3	-	-	-	

	<u>Loading/ Unloading Sat- isfaction</u>	<u>Actual Avail- ability</u>	<u>Actual On-time</u>	<u>Actual Good Condition Arrival</u>	<u>Claims Problems</u>	<u>Rate In- formation</u>	<u>Increased Solicitation</u>
Increase (or Change)	-	3	5	2	3	1	13
Decrease (or Eliminated)	1	3	4	2	1	4	-
No Change	18	13	9	15	15	12	5
No Response	1	1	2	1	1	2	2
Other	-	-	-	-	-	2	-

S/R Overall Experience (more than one response from each carrier in each area possible) *

<u>Service</u>	<u>Rates*</u>
Increase	7
Decrease	5
No Change	-
No Response	8
Other	-

TABLE II
(continued)

STUDY OF TRUCKING DEREGULATION IN FLORIDA SHIPPER/RECEIVER RESPONSES

	Rate Satisfaction	Availability Satisfaction	Service Frequency Satisfaction	On-time Service Satisfaction	Ease of Service Satisfaction	Loss and Damage Satisfaction
Increase (or Change)	0	1	2	2	2	2
Decrease (or Eliminated)	2	1	3	3	1	1
No Change	15	16	14	14	15	15
No Response	3	2	1	1	2	2
Other	-	-	-	-	-	-
S/R Dropped Carrier		% Rate Changed				
Increase (or Change) Decrease (or Eliminated)	- 3	(6) 15% or more (5) 5% to 11%				
No Change	15	1				
No Response	1	7				
Other	1	1				

Several background oriented questions were not tabulated.

Appendix A

The literature on the small community issue in trucking is diverse and growing. This appendix contains a critique of two recent studies that bear directly or indirectly on the deregulation experiences in Florida. The study by James W. Freeman is the only other analysis of deregulation in Florida, and hence is especially important. The second study by Alice Kidder does not concern Florida directly, but it does contain important inferences. Appendix B contains a summary of other recent literature on trucking service to small towns.

Freeman Study [16]

Properly interpreted, the Freeman Study finds that deregulation in Florida has initially benefited the large TL shipper/receiver in major population areas in terms of increased service and lower price. But these same findings cannot be extrapolated to small communities due to selection bias of the responding shippers/receivers. In Freeman's original paper, the one referenced here, the dollar sales of respondents were given in question #14, and are:

<u>Shipper's Sales</u>	<u>Total Responses</u>	<u>%</u>
\$0-\$1 million	14	12%
\$1-\$5 million	40	36
\$5-\$25 million	41	37
Over \$25 million	17	15

Only 12 percent of the responding shippers had sales under \$1 million, whereas 52 percent has sales in excess of \$5 million. While "small" is a relative term, it is clear that a multi-million dollar business is generally not considered a small business.

In addition, question 15 indicates that 85 percent of the shipper respondents were located in a major metropolitan area or on a major highway. In sum, the results of the Freeman Study do not seem applicable for small

shippers in small, isolated communities. The respondents have a big business bias, probably ship by TL rather than LTL, and are located in major metropolitan areas.

Freeman notes on page 12, ". . . the survey does not record a single instance when a shipper ended the first year of deregulation with access to fewer carriers than it had during regulation" This is a misleading statement. Recall that in our study we found greater carrier solicitation was for large size shipments, not small shipments, and concentrated among fewer days of the week.

The carrier survey also has problems due to its heterogeneous sample. Of the 51 carrier respondents, only 17 are LTL carriers, whereas 18 are TL carriers, 15 are household good carriers and 7 are bulk carriers. Only 5 carriers said they were primarily intrastate. Thus, his findings have little bearing on the LTL intrastate traffic to/from small towns.

In sum, the Freeman Study fails to adequately identify small shippers, small communities, and intrastate LTL traffic. His findings therefore do not seem relevant to the small community issue.

Kidder Study

In a followup to [20] entitled Report on the Followup Study of Shipper/Receiver Mode Choice In Selected Rural Communities, 1981, Alice Kidder has updated her 1980 survey of shippers/receivers in rural North Carolina, South Carolina and Georgia to include a subsample of the original Southern shippers in her 1978-79 survey. She also conducted a survey in 1980 for rural shippers/receivers in Maine, New York, and Pennsylvania. This Northern sample is not intended to measure the post Motor Carrier Act of 1980 consequences, but only to parallel her original 1978-79 data. The follow-up Southern study, however, does purport to measure the initial impact of MCA

of 1980.

Like our study, Kidder finds mostly "no change" responses to questions regarding the number of carriers competing for business. Similarly, she cannot correlate service problems with community size or distance from interstates. Rate increases were experienced by most shippers during 1979-81 and freight rate increases were slightly correlated with inaccessibility of shippers/receivers. But it is observed that "Rates seem to have gone up in the rural areas more than urban areas . . . " [p. 74]. These results seem to be generally consistent with our findings -- large "no change", but some evidence that rate changes are related to size of shipper/receiver and/or distance from interstate.

Appendix B

Summary of Recent Major Literature on Trucking Service to Small Communities

<u>Author(s)</u>	<u>Purpose of Study</u>	<u>Period</u>	<u>Conclusion</u>
<u>DCT Sponsored Studies</u>			
Breen and Allen (10)	Service to small communities in Northwest	1970's	Cross subsidizing is not occurring. Alternative sources of service (UPS, Class II and III carriers, private carriers) are providing adequate service.
Borlaug, DeVierno, et.al. (8)	Service to 6 small towns in Nevada, Kentucky, and New Mexico	1979	Service is adequate. Common carrier obligation does not assure service. Alternative sources of service (UPS, private carriage) are providing adequate service.
Borlaug and Phillips (9)	Service in 6 small towns in Michigan	1979	Service is adequate, although most is provided by UPS and private carriers. General satisfaction with ICC regulated service. Regulatory reform would not have a negative impact on service.
Orvis (23)	Service in 2 small Kansas communities	1979	No cross-subsidy. Service is satisfactory, although most is provided by private carriers. Most problems are a result of current regulatory system. p. 60-61.
Marvich and Thornton (22)	Service in 2 small Alabama towns	1979	Small businesses do not rely heavily on regulated carriers, although larger shippers do. Regulatory reform will not have negative impacts.
Pustay, Drake, Frew (25)	Pricing of operating rights sold on 67 small community routes	1970's	Operating rights were sold at positive prices even for low density routes.
Kidder (20)	Rural shippers/receivers choices and satisfaction with trucking services in North Carolina, South Carolina, and Georgia	1979	Majority of rural shippers/receivers do not depend on regulated common carriers; they do depend on private carriage and UPS. Users are more concerned about possible service determination than price increases. Common carrier obligations in rural communities have little meaning.

B2

Interstate Commerce Commission Studies

Fauth (15)	Evaluation of regulatory reform on small communities in general	1979	Regulation does not force unprofitable service or provide cross subsidy. Reform would not impact adversely on small towns. (p. vii-viii)
ICC (19)	Initial carrier and shipper responses to intrastate trucking deregulation in Florida	1980-81	New entry, cost cutting, rate structure innovations, rate reductions, and increased fleet/resource flexibility.

Congressional Committee Reports

Policy and Management Associates (13)	Assess shipper and carrier characteristics in small communities and estimate impact of deregulation	1977	Effects of proposed deregulation are surprisingly undramatic, but on balance positive--decline in rate levels and increase in variety of price/service options. Adverse effects felt by both similar shippers in small and large towns, not necessarily related to size of town. (p. 132)
Congressional Budget Office (14)	Review of recent studies on the impact of deregulation on small communities particularly PMA and ATA	1980	Deregulation will not lead to large-scale discontinuation of service or to greatly increased rates. (p. 1947)

Studies by States or Academics

Thompson, et.al. (28)	Motor carrier service to small communities in Iowa	1980	Motor carrier is the dominant freight mode in rural Iowa. Use of private carriers, UPS, contract operators is significant in smaller towns and increasing. Most shippers are "satisfied" with current system.
Virginia State Corporation Commission (27)	Assessment of motor carrier deregulation on rural communities in Virginia	1979	<p>From the shipper survey:</p> <ul style="list-style-type: none"> a. Shippers are small firms b. Shippers are dependent on regulated carriers c. Low volume (50-100 lbs.) shipments dominate d. LTL service is regulated satisfactorily <p>From the carrier survey:</p> <ul style="list-style-type: none"> a. Freight density is low

b. Revenues are low
To deregulate means to risk losing either quantity or quality of service to rural areas.

Canellos (24) Summary of 1976
empirical studies
on probable impact
of regulatory reform
on small communities.

Common carriers do not serve unprofitable routes or engage in significant cross-subsidizing.

American Trucking Associations Studies/Critiques

ATA (1)	Critique of PMA study (13)	1979	<ol style="list-style-type: none"> 1. Sample selection and classification of small communities are deficient. 2. Shipper selection and questionnaire are faulty. 3. Carrier selection and questionnaire fail to address the cost/revenue of servicing small communities. 4. PMA does not establish a need for change, rather the report reveals that shippers and receivers in small communities are receiving high quality service. (p. i-iii)
ATA (4)	Critique of Congressional Budget Office paper (14)	1980	<ol style="list-style-type: none"> 1. Inadequate review of literature, omitted relevant studies. 2. Studies selected do not adhere to widely accepted research standards of methodology. 3. Fails to measure service provided today. 4. Statistical information violates accepted statistical procedure.
ATA (6)	Critique of Secretary Goldsmith's letter on S.2245	1980	<p>DOT seems to have adopted a novel approach with regard to its own research. Those results which support deregulation are emphasized and highlighted. Those results which support regulation are never mentioned. A careful reading of DOT research results, however, leads to the undeniable conclusion that regulation alone insures adequate reasonably priced freight service to small communities. (p. 13)</p>
ATA (7)	Critique of Breen and Allen (11)	1980	<p>Major flaw in this study is the use of inaccurate and misleading measures of actual service (used proxy measures based on advertisement</p>

in various public sources). No evidence is presented to show that service . . . is inadequate. (p. 10)

ATA (3)	Critique of 3 DOT studies on small communities in Alabama, Kansas, and Michigan (9;22;23)	1980	The DOT has succeeded in distorting the facts with regard to actual service . . . , whether shippers require regulated common carrier services, shipper satisfaction, . . . these reports are not only biased, but sloppy, as well. (p. 8)
ATA (5)	Critique of DOT study on small communities in Nevada, Kentucky, and New Mexico (8)	1980	. . . no evidence is provided to show that the shipping problems faced by small communities are in any way related to regulation or the lack thereof. On the contrary, a survey conducted of the carriers . . . indicates that service and or rates may well be adversely affected by deregulation. (p. 4)
ATA (2)	Critique of ICC study (15)	1980	. . . there is no substantiation for the claim that carriers can and do avoid serving small communities or that small community service is not now so attractive to carriers that it will be necessarily provided in the absence of regulation. There is positive evidence that both common carrier obligation and cross subsidy do exist. (p. 14-15)
ATA	Critique of Iowa DOT study on motor carrier service to small towns in Iowa (28)	1980	. . . the results of this survey support continued regulation of motor common carriers. The consensus of small town Iowa shipper/receivers seems to be that regulation provides good service while deregulation is in unknown environment which guarantees only higher rates. (p. 10)

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Deregulation and the Marketing
of Rail Piggyback Service

by

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DEREGULATION AND THE MARKETING OF RAIL PIGGYBACK SERVICE

Introduction

During the Fall of 1982 a study of shipper agents was begun in order to develop a better understanding of their role in the marketing of rail piggyback service. Shipper agents are exempt¹ firms that help shippers arrange intermodal TOFC (trailer on flatcar) or COFC (container on flatcar) shipments and thus are retailers, standing between the railroads and shippers in the marketing channel.² The purpose of this paper is to describe some of the preliminary study results which have implications for assessing the effects of regulatory reform.

The shipper agent study depended entirely on secondary sources and included review of the literature (a brief bibliography is appended), review of available data, and nine interviews, including seven shipper agents, the attorney for the National Association of Shippers' Agents, and one industrial traffic manager that uses a shipper agent. The agent interviews were generally four to five hours long (except two shorter telephone interviews): the firms were located in Los Angeles, San Francisco, Chicago, New York, Philadelphia, Harrisburg, and Baltimore. They ranged in size from small (handling less than 2,000 trailers per year) to the largest in the industry, handling over 150,000 units annually.

Some Aspects of Demand for TOFC Service

For most domestic shippers, the use of piggyback is potentially a complex and time consuming activity. A recent report³ noted the following series of activities required for a shipper desiring to use Plan II½ TOFC service:

- Arrange for origin cartage
- Arrange with railroad/leasing company to get an empty trailer

- Deliver the trailer to the origin ramp by train "cut off" time
- Arrange for destination cartage
- Return empty trailer
- Process three different bills of lading
- Try to pinpoint responsibility if any damage occurs.

Yet even this list understates the complexity. For example, there may be two or more rail routes available to complete the shipment although only one may provide the most advantageous service-price option. In fact, the best option may change over time as weather, traffic balance, and other factors vary, yet only an experienced piggyback traffic manager with current knowledge of market conditions would be able to identify the best alternative.

Another source of variation -- and thus complexity -- is the market for trailers. There are typically several sources of trailers (railroads, leasing companies, shipping lines) and different kinds of equipment available. Again, prices, availability, and service (such as how long the shipper will be given to load the trailer or container without charge) vary with the season, time, and other factors. Thus, taking advantage of the best alternative requires timely market information -- something not normally available within a firm that ships via TOFC only sporadically.

Given the complexity of using piggyback it is not difficult to understand why many shippers are willing to pay a fee (typically \$25 to \$50 per trailer) to agents to make some of the necessary arrangements, or why some shippers might avoid using TOFC entirely. In fact, this service aspect was strongly emphasized by the industrial traffic manager interviewed. He used an agent primarily for the convenience of being able to handle the shipment with one phone call and emphasized the fact that, "...they [the agent] have all the headaches." The desire of shippers to have agents perform as many services as possible was discussed by virtually all the agents interviewed.

In addition to service and expertise, price is another important factor in using agents since a shipper typically will get a lower TOFC price through an agent than by going directly to the railroad with a single trailer. Today most railroads offer contract rates to agents for large quantity shipments of trailers at rates well below prices available to the typical small volume industrial shipper.

Why most railroads have adopted this wholesale position in the TOFC marketing channel is an interesting question but is beyond the scope of this paper. It is worth noting that most of the people interviewed believed that retailing TOFC service is quite different from retailing other rail services and that most railroads did not develop the marketing skills necessary for success. Generally, TOFC traffic is thought to be truck-competitive and more time sensitive than the bulky, low value commodities that constitute a large part of rail tonnage. Finally, several railroads today do actively retail their TOFC service although they also use agents.

Shipper Agents and Regulatory Reform

Although shipper agents were specifically exempt from regulation under the Freight Forwarder Act of 1942, their activities and the services they could offer were sharply curtailed by that law. Section 402(c)2 of the Act exempted shippers' agents "...whose services and responsibilities to shippers... are confined to the terminal area in which such operations are performed." This terminal area restriction was interpreted to mean that agents could provide service at origin or destination, but not both on the same shipment. This restriction was apparently intended to prevent agents from offering the same service provided by surface freight forwarders.

With the growth and development of TOFC the terminal area restriction effectively prevented shipper agents from providing all the services shippers

desired. Agents could arrange for a trailer, origin drayage and rail line-haul -- and gave shippers one bill for these services -- but they could not arrange and bill for destination drayage also. Thus, shippers still had to find their own destination draymen and pay at least two separate bills.

With TOFC deregulation in March, 1981 (Ex Parte 230, Sub. No. 5) the situation changed significantly. Now agents may perform any service they wish on TOFC shipments that originate and are destined for commercial zones -- a large proportion of all TOFC traffic. This service expansion has been welcomed by shippers and was mentioned by the agents interviewed as a most important direct impact of regulatory reform on the shipper agent industry. By making it easier to use, this change may account for some of the increased demand for TOFC service occurring since 1981.

Table 1, below, indicates carloadings of TOFC traffic as well as total carloadings of all traffic on major U.S. railroads. As noted, TOFC usage has grown since 1980 while total carloadings have continued to decline.

Table 1
Piggyback Usage

<u>Year</u>	<u>TOFC Carloadings</u>	<u>Total Carloadings</u>
1957	249,000	
1960	554,000	
1965	1,077,000	
1970	1,450,000	27,160,000
1975	1,308,000	23,217,000
1979	1,858,000	23,892,000
1980	1,661,000	22,598,000
1981	1,723,000	21,613,000
1982	1,923,000	18,550,000

Source: "Yearbook of Railroad Facts - 1982." American Association of Railroads, Washington, DC

The growth of TOFC usage during the current recession is not typical, as noted in a 1981 article in Railway Age:⁴

"Historically, when the economy has gone into a nose-dive - as it did in the mid 1970's, for example - TOFC/COFC has gone down a lot further than motor-carrier traffic. In 1975, the drop was about 19%, but last year [1980] with the economy again diving, TOFC/COFC dipped by only about 10%, a number that compared well with the figures on truck volume. And in 1981? In '81, motor-carrier traffic is essentially flat - while piggyback is on the rise."

Shipper Agent Growth

As one would expect (given the growing demand for TOFC service) the shipper agent industry appears to be growing in terms of volume and number of firms, although the data is quite sketchy. Most of the agents interviewed reported growth in the number of trailers handled since 1980. Hub City -- which is apparently the largest shipper agent in the country -- reported a 45% growth in trailers handled in 1981 over the previous year. During 1982 the firm continued to grow and expected an increase of about 13% in trailers handled.

Concerning the number of shipper agents in business, the agents interviewed reported almost unanimously that there had been a rapid increase since 1980. One reported, for example, that in 1980 there were three or four agents in the San Francisco area and there are now at least twelve. The president of the National Association of Shippers' Agents estimated that in 1980 there were about 200 agents in business but that this number has now jumped to six-hundred. The growth in agents may be an important factor in the growth of TOFC usage since agents often market and promote piggyback aggressively.

Given the growth of TOFC traffic during a recession it is natural to wonder where the new traffic is coming from. Virtually all the agents interviewed believed that the majority of new TOFC traffic had previously moved

by truck, although some was diverted from boxcar. This belief was also expressed by one rail executive describing the railroad's increased TOFC business since 1981: "Before we got it, it was mostly TL [truck load] business moving by irregular route carriers."⁵ Thus, it appears that there has been a definite shift of traffic from all-highway to TOFC since 1981.

Regulatory Change and TOFC Prices

An important effect of regulatory reform suggested by most of the agents interviewed involved TOFC prices. Most believed that deregulation, falling trucking prices and the recession all worked to depress or slow the increase in TOFC prices. One agent, for example, claimed that today prices were \$120 per trailer lower (from the West Coast to the Northeast) than they were seven years ago.

A recent speech by a Chicago and North Western railroad executive supported the views of the shipper agents: since 1981 the Chicago and North Western had reduced its TOFC prices "...partly from the recession, partly from the railroad's approach to entering new markets..." Also, the Chicago and North Western has increased dramatically its use of exempt contract rates (66% of TOFC traffic in 1982, up from 53% in 1981) and has eliminated its Plan I tariff entirely.⁶

A shift to negotiated, confidential contract rates and away from the published tariff plans was found among all the agents interviewed. Typically, the contracts quote prices on a "per trailer" basis and require a minimum volume of trailers shipped per time period, such as 5,000 trailers per year. The maximum weight per trailer is generally about 40 thousand pounds; payment is often required within seven days.

It may be difficult to measure the changes in TOFC prices since 1980

because rail pricing methods have changed. Data from the Bureau of Labor Statistics for November, 1982 (the latest currently available) indicate that the TOFC/COFC price index increased 3.4% from November, 1981 -- one of the smaller increases of the 23 product groups included in the index. (The index for all freight increased 4.1% over the period.) Yet the index is intended to measure price changes under specific and unchanging conditions although there has been a shift from tariff rates to contract prices. In any case, the BLS index is the best available data covering a broad cross section of railroads.

Another pricing effect mentioned by several agents involves changes in the rules (and thus the effective prices) governing transcontinental TOFC traffic. Prior to deregulation, this traffic was required to pay a high excess weight charge for all weight above 60,000 pounds per flatcar. In addition, another rule required that no single commodity could exceed 60% of the weight of any two trailers tendered together for rail TOFC shipment. (Thus, if a shipper tendered two trailers loaded with the same product, he would be billed for four trailers.)

According to many agents interviewed, these rules were primarily adopted to discourage shippers from switching their boxcar traffic to TOFC shipment. Since the introduction of exempt contract rates, the rules have been eliminated and no longer work to slow the growth of piggyback. This change suggests the possibility that the less competitive market conditions that existed prior to deregulation tended to retard technological change. In other words, TOFC may have developed more slowly under regulation than it would have under competitive market conditions.

TOFC Discount Rates and Operating Efficiency

One recent pricing innovation mentioned by most of the shipper agents

located in the East was the introduction of special discount rates. (Sometimes called "special commodity quotes.") These rates are available under contract and are intended to apply only to new TOFC traffic -- that is, traffic currently moving over other modes, typically by motor. The rates are said to be quite low and only available in the backhaul direction. Some railroads in the West have also instituted back-haul pricing tactics to lure truck traffic to TOFC⁷ and have reduced empty backhauls. This may be an excellent example of how regulatory reform and competition can work to improve efficiency and reduce prices.

Deregulation and Plan III Operators

No discussion of TOFC deregulation would be complete without mention of the development of "Plan III operators."⁸ In 1979 the ICC exempted the rail shipment of fresh produce -- a market dominated at the time by unregulated trucking. In response, many railroads negotiated low TOFC rates with third parties -- the Plan III operators -- who provided the refrigerated trailers, retailed the service to shippers and balanced shipments between the West and the Northeast.

Typically, these operators (many of whom are trailer leasing companies) arrange for shipment of produce from the West to the Northeast and return the trailers loaded with merchandise traffic. The return load of merchandise is required by the contract and is accomplished through the efforts of an affiliated shipper association, forwarder or motor carrier, or by simply leasing the trailer (sometimes for free) to an unaffiliated agent or association. Since 1980 these operators have grown rapidly and 1982 shipments of produce are forecast to reach 75 to 80 thousand trailers -- with an equal number of backhauls of merchandise. It is interesting to note that regulatory reform in the produce market had parallel effects with the 1981 general TOFC deregulation: Some prices were reduced and demand increased.

Summary and Conclusions

It is impossible to draw conclusions with confidence from such a limited study, yet the interviews do suggest several themes for further research. First, TOFC deregulation reduced some of the legal restrictions placed on shipper agents thus allowing them to provide the service shippers wanted most. This service improvement may have contributed to the growth of TOFC traffic since deregulation.

Second, deregulation, as well as the recession and truck competition, worked to lower prices or moderate their rate of increase.

Third, backhaul pricing appears to be an example of how regulatory reform can help improve efficiency and reduce prices.

Fourth, increased competition from deregulation appears to have eliminated some unnecessary rules that may have retarded the growth of piggyback.

Fifth, most new TOFC business apparently has been attracted from motor carriage.

Finally, the growth of TOFC since deregulation may be a response to several factors, including reduced prices, improved service and convenience, and increased marketing and promotion.

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Footnotes

¹Under Title 49, Section 10562(4)CFR they are exempt from ICC regulation under some circumstances.

²Other intermediaries in the TOFC marketing channel include non-profit shipper associations, regulated surface freight forwarders and "Plan III operators."

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⁷Welty, G. Op. Cit., p. 24.

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MOTOR CARRIER RATE UNIFORMITY: A COMPARISON OF
RATES BY GEOGRAPHIC AREA AND COMMUNITY SIZE

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TABLE OF CONTENTS

ACKNOWLEDGEMENTS	5
I. PURPOSE AND SCOPE	6
A. ALLEGED BUREAU BENEFITS	6
II. RATE COMPARISON PROCEDURE	12
A. SOURCES OF RATE VARIATION	12
B. TYPES OF RATES	13
C. METHODOLOGY	17
D. CONCLUSIONS	18
III. BACKGROUND	20
A. THE CTS TAPES	20
B. DATA SELECTION	28
C. EVIDENCE OF THE EFFECTS OF MOTOR RATE BUREAUS: ANALYSIS OF COVARIANCE	29
IV. RESULTS OF ANALYSES OF COVARIANCE	33
A. COMPARISONS OF RATES	33
B. COMPARISONS OF SPECIFIC COMMODITY RATES ACROSS RATE BUREAUS	34
C. COMPARISONS OF RATES TO DIFFERENT SIZES OF COMMUNITY	37
BIBLIOGRAPHY	40
APPENDIX I	
APPENDIX II	

LIST OF TABLES

TABLE II-1	Summary of Rate Types for All Bureaus	14
TABLE III-1	Geographic Regions Served by Major Rate Bureaus	22
TABLE III-2	Table of "T" Values for Total Origin (Destination) to Subclass of Origin (Destination) Comparisons of Fitted Revenues at the Mean	32
TABLE IV-1	Analysis of Covariance: Summary Sheet	35
TABLE IV-2	Beales Metropolitan Adjacency Code	38
TABLE IV-3	Comparison of Adjusted Revenue Per Shipment for Typical Shipments by Size of Origin and Destination 1976 and 1980	41
TABLE IV-4	Comparison of Adjusted Revenue Per Shipment for Typical Shipments by Beales Code for Origin and Destination in 1976 and 1980	41

LIST OF FIGURES

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I. PURPOSE AND SCOPE

Arthur D. Little, Inc. was awarded the second of two contracts by the U.S. Department of Transportation to evaluate the effects that motor rate bureaus have on the level and reasonableness of the rates that regulated carriers charge shippers. Motor rate bureaus currently have antitrust immunity that allows them to set the rates that regulated motor carriers charge their customers. The Department of Transportation's interest in motor carrier rates is prompted, at least in part, by the passage of the Motor Carrier Act of 1980. This legislation stopped just short of removing the rate bureau's antitrust immunity. Instead it provided for the formation of The Motor Carrier Ratemaking Study Commission to study the issue of antitrust immunity for motor carrier rate bureaus. The Commission held hearings on this issue during 1982 and will issue a report and a recommendation on the advisability of continuing of antitrust immunity, to the Congress, no later than January 1, 1983.

A. ALLEGED BUREAU BENEFITS

Representatives of the motor carrier industry have frequently alleged that one of the principal advantages of motor rate bureaus is that they have the effect of equalizing rates for similar transportation services for all shippers. For example, Jesse Friedman argues that:

The principal economic benefits which are to be achieved by collective ratemaking in trucking relate to the avoidance of damaging forms of economic discrimination which, because of the structure and character of motor freight transport, would be inevitable under unrestrained competition.. In the absence of collective ratemaking, it would be impossible to prevent rate differences which are not justified by any difference in cost or any other relevant economic consideration. It would be impossible to

assure that all shippers, large and small, are treated in a nondiscriminatory way by carriers as a group, or to assure nondiscriminatory treatment among competitively-related commodities. Not only shippers, but communities and employees as well, would suffer unjustifiable economic hardship, economic resources would be misallocated, and economic efficiency would be impaired. With collective ratemaking, there exist the opportunity and the machinery for averting these consequences.

Similarly in another chapter of the same treatise, Friedman continues:

The problem of avoiding rate favoritism has many aspects. Collective ratemaking helps to ensure, for example, that two competing producers located at point A and obtaining their raw materials from point B will receive equal treatment in trucking rates even if they are served by different carriers between those same two points. Similarly, the two competitors will receive equal treatment in trucking rates in shipping their finished goods to a third point. Where there are various market destinations, the class rates from a given origin to the various market points will be uniform, on a scale adjusted for distance, for all carrier members of a given rate bureau...

Henry, Jim Akron Hearing pg. 2 argues in a vein similar to Friedman, saying

In the first place, it is also general public policy that a common carrier system be maintained in order to fairly and equitably serve the entire length and breadth of the nation, meaning all places, all people, and all business,....

Henry continues on page 3 of his testimony

Without collective ratemaking, the increase in confusion, the inability to prevent discrimination, preference and prejudice, and service interruptions, the impacts upon communities, points and places where development has taken place based upon the availability of the motor common carrier system, will result in increased costs that will far exceed any theoretical cost of motor carrier regulation no matter what number is picked out of the air as the cost of such regulation.

On page 18 in a discussion of rate bureau functions with respect to carrier cost,

Henry continues,.....

It is truly questionable whether the competitive tariffs could exist at all without the keystone of the bureau tariffs as a reference point. Only a few major carriers have the capacity to analyze their costs and translate them into rational cases for pricing. Most rely upon the expertise of the bureau staffs and the ability of the bureaus to accumulate data from all of their members. . As I have mentioned earlier, it is this long-range and continuing collection of data and analysis which makes possible the cost studies and pricing decisions by the industry and by the Interstate Commerce Commission.

James Hite, page 5 has a comment in a similar vein,

More importantly, this system delivers the production of this country to its citizens readily, consistently and with a high degree of cost equalization, price stability and price predictability. The cost of this service is not based on how big you are or where your home is [emphasis supplied]. Every citizen of this country has access to soap or toothpaste with no periodic shortages or oversupply and no price discrimination due to geography [emphasis supplied]

On page 8 Hite continues

Despite claims to the contrary, single-line rates and joint-line rates in reality are not distinguishable [emphasis supplied]. Within Interstate's certified operating authority, there are thousands of joint-line routes. But between any two points there is but one rate....The argument that since joint-line service is by definition more expensive to provide than single-line service and therefore carriers charge more for joint-line service, simply does not hold true in the reality of motor carrier operations. Joint-line service tends to performed almost exclusively on previously published single-line rates.

Again on page 9 Hite says continuing his line of reasoning, that

The consuming public will suffer from this action [cancellation of antitrust immunity] because freight will move at higher combination rates, the sum of two or more local rates, for any move beyond the carrier's system. Or, freight will move on rates that have been created by an oligopolistic pricing system [sic] for this nation....

page 10

Another factor ... concerns ... a very serious consequence if antitrust immunity is eliminated for collective ratemaking. I am speaking about the equalization of shipping costs among geographic and demographic sections of this country which is now maintained through collective rate-making. Without such a process this equalization would be destroyed [emphasis supplied].

McFadden, John page 7 an attorney with the firm of Rice, Carraway and Carpenter says,

... each carrier must establish prices to cover every possible combination of origins and destinations in both single-line and joint-line service.^{10/} Yet there can only be one price for any given shipment transported from and to a particular pair of points, whether the shipment moves in single-line service or in joint-line service. The shipping public will have it no other way. The competitive facts of life are such that shippers are unwilling to accept more than one price applicable to a given size shipment moving to and from a particular pair of points.

Again on page 10 McFadden continues

... the consequences that would flow [from withdrawal of antitrust immunity] would ... be contrary to the ... policy of the Congress.... There is no way under such circumstances that transportation service by motor common carrier could be efficient or economical or would any reasonable adequate service continue to be provided to small communities. The proliferation of rates, charges and classifications that are unjust, unreasonable or unlawfully discriminatory, preferential or prejudicial would spread like raging forest fire.

Continuing his defense of collective ratemaking McFadden says on page 14,

There is only one rate (price) applicable on any given shipment of tires from Akron, OH to Denver, CO--whether the shipment be handled in single-line service or in joint-line service, regardless of the number of connecting carriers involved or the location of the interchange points.

Continuing this argument McFadden says,

...if antitrust immunity is removed ... shipper X will no longer be able to enjoy the same efficient kind of motor common carrier service ... The reason is that....both carrier A and carrier B ... name rates on all sizes of shipments from Akron, OH, to literally hundreds of destination points in connection with both single-line service and joint-line service. Carrier A transports single-line shipments from Akron to Denver. Carrier A also transports shipments in joint-line service that originated in Akron by other carriers and are transferred to (interchanged with) Carrier A at an interchange point such as Cleveland, Chicago, Indianapolis, etc.

It is the principal purpose of this study to determine the accuracy of these allegations by testing rates for uniformity. In order to do this test correctly the carrier services must be as closely matched as possible otherwise the statistical test will not be a valid one. For example, TL and LTL rates are known to vary because they, so that these rates cannot be tested together.

There are several possible interpretations that might be given to the meaning of rate uniformity. Some would argue that it applies only within a single rate bureau and that there are known and acknowledged differences across bureaus. These known differences are attributable to weather, labor cost differentials differences in the times that general rate increase take effect etc. Certainly these reasons may be all true at the same time. But there are two counter arguments to this one, regression analysis explains most (over 90%) of the variation in rates using weight and distance as the explanatory variables. If the timing of general rate increase explains even more of this variation, why is that a justification for collective ratemaking? I argue that it is serious indictment of the system to attribute rate variations to administrative lag, rather than valid explanation of rate variation.

In any case, we argue that the most logical interpretation of rate uniformity is near-equality of rates for closely matched services. Accordingly we have arranged statistical tests that will test us whether equality across rate bureaus holds for arranging these tests we have been more than fair. The test itself does not just look at rates and ask are they identical. The test asks, is there any statistically significant difference between rates that are "normalized" for weight and distance. Normalized means adjusted on an equal mileage and weight. Then the test examines whether there is any greater difference between rates across different bureaus than there is within bureaus. If the variation in rates across bureaus is greater than the variation in rates within bureaus, the test will tell us that rates are not equal. This procedure is discussed in greater detail in the next section.

II. RATE COMPARISON PROCEDURE

In order to test the accuracy of rate industry claims of rate uniformity, we compared the rates charged for similar services in the tariffs issued by different bureaus. To assure that the motor carrier services that we compared were as closely matched as possible, we controlled for as many "non-bureau" factors as possible. These non-bureau are the factors which systematically cause rates to vary. Rates vary systematically by distance and shipment weight. These two sources of variation are known to exist a priori and are not the proper subject of the statistical test. To put rates on an equal footing we adjusted the revenues per shipment as though each was moved the average length of haul and weighed the average shipment weight. This is what we regard as a normalization procedure. The purpose of these adjustments was to isolate factors that may be attributed only to the collective rate making process itself, rather than known differences in shipment weight and length of haul. If we did not make this adjustment the statistical analysis would always invariably imply that there were statistically significant differences in rates between bureaus. This would occur simply because of the differences in length of haul and shipment weight.

A. SOURCES OF RATE VARIATION

Two normal or "expected" sources of rate variation for which we should adjust rates are differences in shipment weight and the distance a shipment travels from origin to destination. It is to be expected that the rate motor carriers charge vary with both weight and distance. Therefore, these are the most important factors for which adjustments or normalization can be made before a test is performed.

In addition to the aforementioned sources of rate variation there is one other factor that we should hold constant to insure a valid test of uniformity. There are many different types of rates that are now commonly in use in the motor carrier industry. We examined only one type of rate at a time when the tests were performed. For example, two of the most common and widely used types of rates are Class rates and Commodity rates. Within each rate category there is yet another dichotomous classification for each shipment. This is based on the weight of the shipment: a shipment is classified as either truckload (TL) or less-than-truckload (LTL), and the rates for the two are known to differ substantially and systematically.

TL generally (but not universally) begins at shipment weights of 10,000 pounds on more.

The use of the label truckload should not be confused with the issue of whether the the road were movement of a trailer is full or not. A "full" (45 foot) trailer generally holds between 14 and 15 tons of (average density) LTL shipments. We evaluated only one major rate category - class rates. Rates should only be compared within a given rate type. For example, we compared Class LTL rates issued by one rate bureau with Class LTL rates issued by other bureaus.

B. TYPES OF RATES

Even though we examined the uniformity of only class rated shipments, an brief explanation of the different rate types is to give the reader some idea of the different types follows. A partial list of these rate types are: 1) Class Rates; 2) Commodity Rates; 3) Commodity Column Rates 4) Exceptions Rates; 5) All Freight Rates; 6) Assembly and Distribution Rates. Freight moves predominately under class rates, s is shown in Table II-1.

TABLE II-1
SUMMARY OF RATE TYPES FOR ALL BUREAUS

RATE TYPE	PERCENTAGE OF TOTAL	SHIPMENTS	REVENUE		MILES		TON MILES
	<u>SHIPMENTS</u>		<u>(1000's)</u>	<u>TONS</u>	<u>(1000's)</u>	<u>(1000's)</u>	
Class							
Rates 1976	90.1	132927264	7160119	65880160	91242688	42216256	
1980	89.5	119237072	10337472	62606352	88582512	43372176	
Commodity 1976	4.3	6358422	1871951	52169520	4495089	28322224	
1980	4.2	5519859	2262664	41150032	3831703	22119568	
Commodity							
Column 1976	2.0	3260423	389789	9009431	1758107	4009567	
1980	2.4	3174013	536873	7322114	1731468	3376276	
Exceptions 1976	1.7	2546503	175387	3185058	1043753	1355507	
: 1980	2.0	2554692	283968	2706311	899143	1222013	

Class Rate

The class rate system constitutes a set of standardized rates that apply to commodities described in the National Motor Freight Classification (NMFC). The NMFC is a compilation of commodity descriptions, each one of which has one or more classification ratings associated with them depending on the size of the shipment tendered by the shipper, the type of packing, the value of the shipment and several other factors. The classification rating numbers usually fall between 50 and 15⁰. There are some classification rating numbers that are either higher or lower. These ratings are used as a parameter in determining the actual cost to the shipper. The classification numbers were originally designed to be a fixed percentage of the "Class 100" rate. Thus, a classification number of 50 originally meant that the rate, (in cents per hundred weight), was 50 percent of the rate applicable to the Class 100 rate.

In order to determine the actual rate for a shipment another piece of information is required -- a rate basis number. The rate basis number is related, but not equal to, the shortline mileage between points or "stations". The rate basis number may be greater or smaller than the actual mileage. When the rate basis number has been looked up, one can then consult a class rate table to determine the applicable rate. If the point to which a shipment is destined is not listed in a station grouping, then the applicable must be found in a different manner. This is done by adding a predetermined charged, or arbitrary as it is called, to the rate applicable to the nearest station grouping.

Commodity Rates

Commodity rates differ from class rates determined by the class rating system because they apply to specific named commodities and specific points in many cases. Commodity rates may also involve special handling arrangements.

Commodity Column

Commodity column rates are also sometimes called "mileage scale" rates because they are commodity-specific rates that apply on points located in the same geographic area. These rates are placed in columns with rates that differ from different mileages. These rates do not necessarily have any specific relationship to the class rates for the same commodities.

Exception Ratings

These are essentially intended to be "exceptions " to the class rating system. The exception may be lower or higher percentage ratings or use different weight brackets in determining the actual rate. The description of the commodities for exception ratings is usually keyed to the NMFC classification.

All Freight Rates

These are provided for in Section 409(a) of the Interstate Commerce Act (as amended). This Section of the Act provides that contract transportation for distances of at least 450 miles between concentration or "assembly" points in truckload shipments, and distribution points (or "break-bulk" points as they are called in the industry), should not be made at a rate lower than would occur for rates established under Part II of the Interstate Commerce Act. The principal users of these rates are Freight Forwarders who assemble small shipments from various shippers and then avail themselves of the lower rates that apply to large shipments.

Assembly and Distribution Rates

These rates are provided for in Section 408 of the Interstate Commerce Act. Like Section 409 rates, they are principally used by Freight Forwarders, although any shipper that is able to tender the minimum size shipment may use this rate; for example, Shipper Associations also use these rates. These rates are lower than the corresponding LTL rates for similar movements. They are not "door to door" rates, because they apply only to movements between assembly points and distribution points. In other words the pickup and delivery function must be performed by the shipper or consolidator.

After comparisons were completed at the aggregate level, we increased the level of detail of the comparisons, using the commodity shipped as another classification level. This more refined level of classification, allowed comparisons of class LTL rates charged by different rate bureaus for items such as men's and women's clothing, for example.

C. METHODOLOGY

Rate Differences Defined

The term "different prices" or "different rates", is defined in this study, as the setting of different rates, (by carriers to shippers), for equivalent services in different markets served by different rate bureaus across the United States. An "equivalent service" means the movement of freight, represented by several freight bills, each one adjusted for its shipment weight and the distance it moved. The weight and distance represent what is commonly referred to as the shipment characteristics or transportation attributes of the shipment, and are the two characteristics on which the rate taper depends.

Study Procedure Summarized

- * Used analysis of covariance to compare the uniformity of rates charged by different rate bureaus;
- * Used analysis of covariance to compare rates published by different bureaus for moving identical NMFC rated commodities;
- * Used analysis of covariance to compare rates published by a single rate bureau for different sizes of community.

D. CONCLUSIONS

The results of the comparison of rates using the analysis of covariance and estimated price cost relationships strongly support the following conclusions:

- * After adjustment for length of haul (distance) and weight, the analysis of the data show that the rates charged by different bureaus for similar services vary significantly. This was true both in 1976 and 1980.
- * Rates vary significantly by community size; to wit, the rate characteristics of large communities differ significantly from those of small communities. This conclusion also holds for both 1976 and 1980.
- * For a given community size, inbound and outbound rate levels (adjusted for shipment weight and length of haul) typically differ.

- * For most sizes of communities, outbound rates are significantly lower than inbound rates.

Discussion of Conclusions

First, we tested the hypothesis that rates were equal for similar services. We found that these rates were different after we adjusted for the weight and distance that these shipments moved. Secondly, we tested for rate equality on movements of the same NMFC commodity. We showed that rates differed even for transportation of the same commodity in different rate bureau jurisdictions, after adjustment for weight and distance.

III. BACKGROUND

A. THE CTS TAPES

Rate Bureaus

In 1948, the motor carrier rate bureaus (hereafter simply rate bureaus) were granted immunity from prosecution under United States antitrust laws by an amendment to the Interstate Commerce Act. This was called the Reed-Bulwinkle Act, and interesting enough the act was passed over President Truman's veto. Because of the antitrust immunity conferred on them by the Reed-Bulwinkle Act, motor carrier rate bureaus have given the legal immunity from prosecution under the Sherman and Clayton Acts. This allows the bureaus to meet in secret session in order to set motor Carrier rates, in sharp contrast to the standards required for other businesses. On the other hand, collective rate making is more common in transportation industries.

The truck rates set by the bureaus are then published in tariffs, (compendia of many rates), and these then become the legal rates for regulated carriers in (and between) designated geographic areas in the United States. Rate bureaus are the creatures of the trucking industry; their members are motor carriers and their operating budgets are generally funded by assessments on their members that are proportional to their annual revenues. The bureaus differ between than as to how much of their total revenue comes from this source as opposed to tariff sales and other sources.

The geographic regions served by the eight major rate bureaus are shown in a tale below. There are two additional bureaus considered by some to be major, Pacific Inland Tariff Bureau and the Niagara Frontier Bureau, that are not included in this list because they are not sufficiently large.

Rate Bureau Territories

Some of the rate bureaus serve an area entirely within several states, while other bureaus serve both an area within by several states plus routes between these states, and other states or regions. Bureaus that formulate and publish tariffs for inter regional routes between regions are commonly referred to as "overhead bureaus". Thus it common to walk into the tariff room of the New England office of a major national motor carrier and see numerous loose-leaf bound volumes of Rocky Mountain tariffs. This occurs because the Rocky Mountain bureau publishes tariffs for traffic moving between New England and many (if not most) other parts of the United States as well as for traffic moving within the Rocky Mountain Region. On the other hand, The New England bureau serves only the New England states; the Middle Atlantic bureau publishes tariffs for traffic between its geographic area and New England, etc. Rocky Mountain is the largest overhead bureau geographically because it covers a larger geographic area with its tariffs than any other bureau. Other bureaus are larger by other measures of size. These territories are described in Table III-2.

Rate Formulation and Ratification

Before publication, the individual bureau rates are formulated by rate bureau committees within each rate bureaus. The members of the committees are appointed representatives of member motor carriers. These committees vote for the approval or disapproval of the rates they formulate. The shippers to whom these rates apply may appear before a rate committee and speak for or against a proposed rate, but only motor carriers that are members of that bureau vote for or against a rate.

A rate that is approved by the relevant committee of a rate bureau then becomes the actual or "effective" rate within a given period of time unless an individual carrier protests the rate. This protest

Table III-1

GEOGRAPHIC REGIONS SERVED BY MAJOR RATE BUREAUS

- | | |
|-------------------------|---|
| 1. NEW ENGLAND | Rhode Island, Connecticut,
Massachusetts, Vermont, Maine, New
Hampshire |
| 2. MIDDLE ATLANTIC | Virginia, West Virginia, Maryland,
Delaware, Pennsylvania, New Jersey,
New York, plus traffic to and from
New England |
| 3. CENTRAL AND SOUTHERN | Illinois, Indiana, Michigan, Ohio,
Western Pennsylvania, Western
West-Virginia and part of Northern
Wisconsin around Lake Michigan |
| 4. EASTERN CENTRAL | New Mexico, Texas, Oklahoma, Kansas,
Nebraska, North Dakota, South
Dakota, Minnesota, Iowa, Missouri,
Arkansas, Louisiana, Wisconsin,
Illinois, Indiana, Michigan, Ohio,
northern Kentucky, plus between the
states of West Virginia, Virginia,
Maryland, Delaware, Pennsylvania,
New York and the New England states |

Table III-1 (Continued)

GEOGRAPHIC REGIONS SERVED BY MAJOR RATE BUREAUS

5. SOUTHERN

Mississippi, Alabama, Georgia, Florida, Tennessee, Kentucky, North Carolina, South Carolina, Virginia, Southern West Virginia plus points between the southern states, the Midwestern and Middle Atlantic and New England

6. MIDWESTERN

Texas, New Mexico, Oklahoma, western Louisiana, Arkansas, Mississippi, Kansas, northern Wisconsin, northern Michigan, Minnesota, North Dakota, South Dakota, Nebraska, eastern Colorado and parts of eastern Wyoming

7. CENTRAL STATES

Illinois, Indiana, Ohio, Michigan and southeastern Wisconsin

must be filed within a fixed time period and the protest must follow established ICC procedures. After a protest has been made by a carrier, the ICC may set the maximum, minimum or actual (effective) rate.

In addition to this procedure, for establishing individual rates, the bureaus may propose "general" (or all inclusive) rate increases to the ICC. General rate increases apply to entire groups of rates (such as Class rates).

The CTS Data

Each motor rate bureau has, since the early 1960's, assembled and maintained a sample of freight bills for its member carriers. The sample is selected by carrier and various preselected weight brackets of the shipments that move under that bureau's rates. This data base is called the Continuous Traffic Study or "CTS".

The CTS is a statistically advanced sample design, but for various reasons, it has not been publicly available for study. The CTS has been traditionally considered proprietary to the regulated motor carrier industry and its use has been jealously guarded. There have been various studies made by the rate bureaus themselves and other industry associations, notably the Motor Common Carrier Association, but these studies are seldom if ever made available publicly. Because of the proprietary nature of the CTS, an analysis of it for a sample that covered the entire United States, what we refer to as a "consolidated tape", was not undertaken until 1979 when the author began the first study published by D.O.T. This analysis was done using 1976 CTS data, simply because this was the latest available at that time.

I-27 Carriers

All members of a single rate bureau do not participate in the CTS, because participation is voluntary. The carriers that do participate are collectively known as "Instruction 27" carriers. They are so named because the ICC requires all regulated carriers to complete an annual report. Such reports require more detail from larger carriers. One section of this annual ICC report is mandatory only for those carriers that earn 75% or more of their total annual revenues from intercity traffic. This section of the annual report is called Instruction 27, and hence therefore this group of carriers is important both, because they are the largest carriers, and also because the content of Instruction 27 contains data on important operating information such as the number of shipments, miles, ton miles and other output data that is essential to economic studies of the regulated industry.

Issue Traffic

The CTS samples only the motor carrier traffic that is carried by regulated general freight carriers. The CTS sample is selected by each participating motor carrier from their own freight bills stratified by various preselected weight brackets. Because the CTS sample is selected, it is said to be "stratified" by carrier and weight bracket. Because of the way in which the CTS carriers is selected and sampled, inferences from the CTS can be made only for large regulated carriers of general freight.

Stratification is a technique used in statistical sample design. Stratification means that the sampling rate (ratio of the sample to the entire potential data base or "universe", doesn't necessarily have to be equal for each stratum. Unequal sampling by stratum offers some statistical and economic advantages. Specifically, a smaller sample may be taken in a stratum that either has more potential members or has less variation, that is has more uniform data in the stratum.

Participation in the CTS for any motor carrier rate bureau is further limited to carriers that earn at least one million dollars per year from traffic that moves using rates published by that same bureau. Such traffic is called "issue traffic". Of course, the larger motor carriers that solicit and move traffic all over the United States belong to several rate bureaus. As a result, these larger carriers may participate in the CTS for several, or all, of the major motor carrier rate bureaus. This multiple reporting to different rate bureaus required us to devise a special program to remove duplicate freight bills.

CTS Compared to Rail Waybill Data

Despite the above mentioned limitations on motor carrier participation in the CTS, the CTS sample generally represents from 80 to 95% of total traffic for any given rate bureau. The highest percentage coverage ratio has in the past generally occurred in the Rocky Mountain Motor Rate Bureau; their coverage has usually been in the 95% range.

CTS Limitations

As we mentioned previously the CTS does not sample any traffic that is moved by independent owner-operators or motor carriers that specialize in agricultural traffic (exempt haulers), because both classes of traffic are either exempt from regulation or not sampled in the CTS. The CTS does include freight bills for traffic that moves intrastate on interstate tariffs and samples of exempt commodities moved by regulated carriers that do participate in the sample. However, these exempt movements do not constitute a large proportion of the total sample.

Prior to the author's publication of a study sponsored by DOT entitled "An Analysis of the 1976 Continuous Traffic Study", there had been no analysis of a CTS for all major rate bureaus publicly available. Assembly of the samples drawn by individual bureaus into a single consolidated data set had never been done on a routine basis even by the industry.

The consolidated CTS data set used for this study is similar, but much superior statistically, to the Carload Waybill Statistics or One Percent Waybill Sample that has long been collected for the railroads. Unlike the CTS, the One Percent Waybill Sample has been publicly available in summary form for many years. Aggregations from this rail sample are jointly published, annually, by the Interstate Commerce Commission and the Federal Railroad Administration of the Department for Transportation. The CTS employs a much more sophisticated sample design than does the One Percent Sample, and hence the CTS is more useful for answering questions about regulated motor carriers than the One Percent Sample is for answering questions about the railroad industry.

The carriers that participate in the CTS select sample freight bills from their files (either by computer or by hand) according to a detailed set of instructions provided by the designer of the sample. The carrier's sample bills are then forwarded to all of the rate bureaus in which the carrier has issue traffic. The bureau then performs a series of verifying checks on each carrier's sample and combines it into a sample that is representative of the carriers and weight brackets of motor carrier traffic that moves under tariffs issued by the bureau. By combining the CTS sample for the major bureaus, we are able to study a sample that is quite representative of regulated general freight motor carrier traffic in the entire United States.

B. DATA SELECTION

The consolidated CTS sample constitutes approximately 400,000 sample motor carrier freight bills per year. The number of sample bills in the CTS depends on the total amount and type of traffic that is moving. There are numerous motor rate bureaus represented in the CTS sample, because carriers may use any legal, applicable rate published by an ICC recognized rate bureau. As a result, freight bills that come from tariffs published by small or obscure bureaus, as well as by individual carriers appear annually in the CTS sample. The subject of this study is major motor rate bureaus. Thus we have concentrated on looking at the rates published by the eight major regional motor rate bureaus, a few of the smaller bureaus (in cases where we examined specific commodities) and "Independently Filed Tariffs" or rates independently filed by individual motor carriers and published by the major bureaus. To reiterate, these eight major bureaus are:

- * Central States Motor Freight Bureau, Inc.
- * Southern Motor Carriers Freight Conference
- * Middle West Motor Freight Bureau
- * Central and Southern Motor Freight Tariff Association, Inc.
- * New England Motor Rate Bureau, Inc.
- * Middle Atlantic Conference
- * Eastern Central Motor Carrier Association
- * Rocky Mountain Motor Tariff Rate Bureau, Inc.

Our sample data was sorted so that (for each bureau), we made comparisons only between rates of the same type. For example, we compared the LTL Class rates issued by different bureaus. We also compared the TL Class rates issued by the different bureaus. It would be inappropriate to compare rates in any other manner.

C. EVIDENCE OF THE EFFECTS OF MOTOR RATE BUREAUS: ANALYSES OF COVARIANCE

The Analytical Problem

The analytical problem we face in testing for statistically significant differences between motor carrier rates published by different motor carrier bureaus may be stated as: "Are there any (statistically significant) differences between the measurements or values in two or more categories?" The principal statistical technique that is usually used to address this question is known as the analysis of variance. The scientifically correct procedure to follow in answering a question such as this one is to pose "null hypothesis." The null hypothesis is always formulated as an hypothesis that there exists no significant difference between the values in different categories (rates across bureaus in this case). If there are significant differences between the rates in the categories, the null hypothesis will be rejected. When the null hypothesis is rejected, then we can conclude that there do exist (statistically significant) differences between the values in different categories.²

Test of Hypothesis: Analysis of Covariance

When there are reasons known in advance, that are not associated with the statistical test, that cause the values in the categories vary, statistical techniques are available to correct for this variation or "normalize" the variables before the test is performed. The analysis of covariance is such a statistical technique. The analysis of covariance may be thought of as a two-step process (although

² To be inserted

mechanically the process is accomplished in one step). The first step is to adjust the values in a category for the known or "normal" reasons that they vary. This is what we have referred to as normalization. The second step is to perform a test to see if there is any (statistically significant) difference between the "adjusted" or normalized values. The adjustment technique is called regression analysis, and adjust rates to the same average value of shipment weight and distance between origin and destination.

Regression Analysis

Regression analysis constructs a mathematical relationship between two or more variables -- a dependent variable and an independent variable or "covariate" as it is called. When this relationship has been established it is possible to compute the value of a dependent variable for possible value of an independent variable. The analysis of covariance adjusts or normalizes the dependent variable to a standard level of the independent variable or variables. This standard level is the mean value of the independent variables. Then, the analysis of covariance tests the normalized values for any (statistically significant) differences.

Rate Taper

In the case at hand, rates published by different bureaus are known to vary with weight and instance; these two variables are the covariates. This relationship is known as the rate "taper", a valid test requires that. We must adjust rates for this taper before the test. Otherwise, some of the variation between rates would simply be due to the different shipment sizes of shipment and distances they were shipped and not the effect of the bureaus ratemaking procedures themselves. This adjustment procedure then tests to see if there is more variation across bureaus than within bureaus. If rates varied enormously within bureaus the obvious differences across bureaus might not be statistically significant.

To recapitulate In step one, the analysis of covariance adjusts the rates published by different bureaus for the taper. In step two, we ask the question about the significance of any remaining differences in the adjusted rates.

Summary

In summary, the analysis of covariance allows us to test for statistically significant differences in rates after the rates have been adjusted for weight and distance -- the taper. The mathematical or "functional" relationship between rates and their associated weights and distances as estimated in the analysis of covariance is illustrated in Table III-2.

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TABLE III-2

TABLE OF "T" VALUES FOR TOTAL ORIGIN (DESTINATION) TO SUBCLASS OF ORIGIN (DESTINATION)
COMPARISONS OF FITTED REVENUES AT THE MEAN

Regression	Step	Origin 1,2,3,4,5 Compared to	Origin = 6,7	Origin = 6,8	Origin = 8,9	Origin = 7,9	Dest = 1,2,3,4,5 Compared to	Dest = 6,7	Dest = 6,8	Dest = 8,9	Dest = 7,99
Reg. 1, 1976 "T" Value Revenue (1n)	2		-1.834 3.6362	-2.649 3.6555	0.6674 3.5902	-0.0505 3.6150		3.064 3.5786	1.493 3.5926	-1.035 3.6526	1.840 3.5871
Reg. 1, 1980 "T" Value Revenue (1n)	2							1.2370 3.5911	0.5514 4.017	1.942 3.9311	2.661 3.5636
Reg. 1, 1976 "T" Value Revenue (1n)	2		-1.098 3.6362	-1.850 3.6447	-0.3831 3.6232	-0.1106 3.6078		2.949 3.5594	1.531 3.5834	-0.3634 3.6267	2.022 3.5749
Reg. 1, 1980 "T" Value Revenue (1n)	2		-0.3982 4.0051	-0.3249 4.0055	0.2113 3.9881	-0.5092 4.0098		1.994 3.9762	0.6054 3.9934	2.153 3.9078	2.886 3.9525
Reg. 1, 1976 "T" Value Revenue (1n)	3		-1.217 3.5916	-0.4894 3.6188	0.4277 3.5916	2.473 3.5632		2.923 3.5727	2.055 3.5759	0.0231 3.6113	1.792 3.5811
Reg. 1, 1980 "T" Value Revenue (1n)	3		-2.499 3.9690	-1.6919 3.9710	0.6761 3.9755	-1.705 3.9720		1.781 3.9824	0.2840 4.0015	1.549 3.9426	2.675 3.9616

IV. RESULTS OF THE ANALYSES OF COVARIANCE

A. COMPARISONS OF RATES

We have performed two types of rate comparisons using the analysis of covariance procedures that were described in detail in the previous section. First, we tested for uniformity of rates across different rate bureaus. By this we mean that we tested for uniformity of rates for comparable movements of the same commodity in the different geographic jurisdictions of the eight major motor carrier rate bureaus.

In each case we compared rates of the same type for uniformity. For example, we compared LTL Class rates for moving a specific commodity. In addition, the analysis of covariance procedure adjusts the rate per shipment for each rate bureau to the mean overall level of weight and distance. This adjustment procedure has the effect of removing variations in revenue per shipment that are due to differences in the weight and distance that each shipment moved.

The identical statistical procedure was followed to test for uniformity of rates across different sizes of communities. Communities were classified by county population as well as by the proximity of the county to large counties. In other words, small counties near counties with large populations are treated as less rural than are communities in counties that are not contiguous to densely populated counties. This system of community size classification uses county size descriptions called Beales codes. A more complete explanation is found below.

Choice of Commodities For Rate Uniformity Tests

The commodities used in the tests of rate uniformity were chosen according to their frequency of appearance in the CTS. The commodities are classified according to the National Motor Freight Classification scheme. This classification assigns a unique seven digit number to approximately 17,000 commodities that are frequently moved by truck. Commodities are classified according to fifteen different characteristics including density, packaging, perishability, fragility and commodity value. Tests were performed on a total eleven different commodities. Eight of these comparisons were for LTL Class rates and three were for TL Class rates.

Conclusions

This study has found statistically significant differences among the rates that are charged shippers for moving the same commodity in the different geographic areas covered by rate bureau tariffs. The rates that were compared were adjusted for differences in shipment weight and length of haul (distance the shipment moved.)

We also found statistically significant differences in the rates charged for shipments to communities of different sizes. As before, the rates were adjusted for variations in weight and distance. These comparisons were made both for traffic destined to, and originating in, communities of different sizes.

B. COMPARISONS OF SPECIFIC COMMODITY RATES ACROSS RATE BUREAUS

A summary of the results of the statistical comparisons of rates in different rate bureau areas is shown in Table IV-1 entitled, "Analysis of Covariance Summary Sheet: Commodity Level Tests of Significance for Rate Uniformity Among Class Rated Shipments." More detail on the tests is provided in Appendix I, "Analysis of Covariance: Detailed Results of Commodity Level Rate Comparisons."

TABLE IV-1

ANALYSIS OF COVARIANCE: SUMMARY SHEET

COMMODITY-LEVEL TESTS OF SIGNIFICANCE FOR
UNIFORMITY AMONG CLASS RATED SHIPMENTS
1980 CTS

	<u>NMFC COMMODITY NUMBER</u>	<u>RATE TYPE</u>	<u>COMMODITY DESCRIPTION</u>	<u>TEST RESULT</u>	<u>RANGE¹ OF ADJ. REV</u>
[1]	4858003	LTL CLASS		SIGNIFICANT	1.2892
[2]	4850003	LTL CLASS		SIGNIFICANT	1.2096
[3]	4926502	LTL CLASS		SIGNIFICANT	1.3111
[4]	4939000	LTL CLASS		SIGNIFICANT	1.3185
[5]	4986000	LTL CLASS		SIGNIFICANT	1.2449
[6]	5942000	LTL CLASS		SIGNIFICANT	1.3670
[7]	6303500	LTL CLASS		SIGNIFICANT	1.3013
[8]	706800 [*]	LTL CLASS		SIGNIFICANT	1.2819
[9]	6303500	TL CLASS		SIGNIFICANT	1.6808
[10]	5942000	TL CLASS		SIGNIFICANT	1.2328
[11]	2816000	TL CLASS		NOT SIGNIFICANT	1.1656

¹Level of Significance: Tests were performed at the 5% Level.

Before discussing the results of the analyses of covariance, we would like to direct the reader's attention to another exhibit. Table IV-1 "A Comparison of Rates Contained In Different Rate Bureau Tariffs."

This table compares rates ascertained by examination of rate bureau tariffs. The purpose of this exercise is to examine the range of rates shown in the tariffs of various bureaus for equal-sized shipments moving roughly equal distances.

Of course, the tariff rates do not provide us with information about the relative mixture of traffic that moves in a particular geographic area. Nevertheless, we do know that such traffic exists because we observe that a substantial number of freight bills sampled in the CTS are for moving Knit Fabrics. The information gives us some useful perspective on the amount of variation that exists in rates sampled from tariffs as compared to those sampled from the CTS.

The table shows that LTL rates for moving Knit Fabrics vary from a low of 982 (cents per hundred weight) for movements between Las Vegas, NV and Pomona, CA in the Rocky Mountain tariff area to a high of 1759 (cents per hundred weight) for movements between Boston, Massachusetts and Ellsworth, Maine in the New England tariff area; this range represents a ratio of 1.79.

Comparing TL rates for moving Knit Fabrics, we find a similar range of rates. The TL rates vary from a low of 244 per cwt for movements between Atlanta, Georgia and Oak Ridge, Tennessee in the area served by the Southern bureau to a high of 430 per cwt for movements between Hartford, Connecticut and Montpelier, Vermont in the area served by the New England bureau; this range represents a ratio of 1.76

The results of the analyses of covariance are summarized in Table IV-1. Each entry gives the NMFC number of the commodity for which comparisons were made, the test result, and the range of adjusted revenues. There were a total of eleven comparisons: eight for LTL rates and three for TL rates.

Each of the LTL rates compared shows that there were statistically significant differences in the rates charged to shippers for moving the identical commodity in the areas served by different rate bureaus. The range of adjusted rates varies from 1.2096 to 1.3670.

Only three TL rates were compared. One of these three showed no significant difference. The other two comparisons did indicate statistically significant differences in rates charged in different geographic areas.

The tests of significance indicate that motor carrier rates are not uniform across rate bureau jurisdictions, contrary to industry claims. From a technical point of view, this means that there is more variation in rates between rate bureaus than there is variation in rates within the individual rate bureaus.

C. COMPARISONS OF RATES TO DIFFERENT SIZES OF COMMUNITY

Movements of traffic to and from communities of different sizes were sorted by Beales code. The smallest communities are represented by Beales eight and nine. These are counties in which the total population of the largest individual community is less than 2,500 persons.

Beales codes also classify counties by their proximity to Standard Metropolitan Statistical Areas (SMSA's). Thus small communities in counties that are adjacent to SMSA's are classified as being less rural than similar but more isolated counties. Beales codes six and eight apply to highly populated counties that are adjacent to SMSA's. By contrast, Beales codes seven and nine apply to highly populated counties that are not adjacent to SMSA's. A complete description of the Beales code is found in Table IV-2.

TABLE VI-2
BEALES METROPOLITAN ADJACENCY CODE

<u>CODE</u>	<u>DEFINITION</u>
1	County in core or on fringe of SMSA. SMSA population least one million, 1970.
2	County of SMSA. SMSA population 250,000-999,999 in 1970.
3	County of SMSA. SMSA population 50,000-249,999 in 1970.
4	County with at least 20,000 urban residents, contiguous to an SMSA.
5	County with at least 20,000 urban residents, not contiguous to an SMSA.
6	County with 2,500-19,999 urban residents contiguous to an SMSA.
7	County with 2,500-19,999 urban residents, no contiguous to an SMSA.
8	County with fewer than 2,500 urban residents contiguous to an SMSA.
9	County with fewer than 2,500 urban residents, not contiguous to an SMSA.
0	County unknown or outside 48 contiguous states.

NOTES

1. An urban resident is a resident of a place or township with 2,500 or more inhabitants in 1970.
2. A County is contiguous to an adjacent SMSA if at least 1% of workers in the county commute to the SMSA.

Description of the Analysis

We specified a regression equation in which revenue per shipment was the dependent variable and weight and distance were the independent variables. The predicted revenue per shipment when weight and distance were set at their overall average values was calculated for various groups of communities grouped together by Beales code.

Separate regression equations were computed for: 1) Large communities represented by Beales 1,2,3,4 and 5 which aggregates communities with urban populations between 20,000 and 1,000,000; 2) Smaller communities represented by Beales 6 and 7 with populations between 2,500 and 19,999; 3) Smallest communities represented by Beales 8 and 9 with populations of less than 2,500.

Small Community Rate Comparisons

Origins and destinations of freight bills from the CTS were divided into categories based on the 1970 Beale's Code. The smallest community categories, Beale's 8 and 9, are counties where the largest town has less than 2,500 persons. An additional comparison was made possible by the fact that Beale's codes for mid-size and smaller counties are further divided by their proximity to SMSA's. Beale's Codes 6 and 8 are for small counties that are contiguous to SMSA's areas, whereas Codes 7 and 9 are for those communities that are not adjacent.

Analysis

A regression was specified where revenue per shipment is a function of the weight of the shipment and the distance it was moved. Regression analyses were performed for Beale's 1 through 5 (urban population from 20,000 to 1 million), smaller counties (Beale's 6 and 7 with urban population from 2,500 to 19,999), and very small counties (Beale's 8 and 9 with urban population of fewer than 2,500) for both the years

1976 and 1980. More detailed information on these regressions can be found in the Appendix to this chapter. The rates for moving a typical shipment to or from a smaller (Beale's 6 or 7) or very small (Beale's 8 and 9) community was compared to the cost of a similar movement to or from larger ones (Beale's 1 through 5). Similar comparisons were made between small contiguous and non-contiguous counties and larger ones.

The year 1976 represent the pre-regulatory reform era, whereas 1980 represent a much more competitive environment.

Results

This analysis showed that the shipper's cost of a typical shipment,* in 1976 was not significantly affected by the population or remoteness of either the origin or destination. Table IV-3 shows the effect of community size on rates for a typical shipment. Table IV-4, by grouping Beale's 6 and 8 (communities contiguous to urban areas) together and similarly grouping Beale's 7 and 9 (not contiguous), examines the effect of remoteness on rates to small communities that have similar populations.

In 1976, the eight small community revenue adjusted estimates are about equal to the corresponding large community estimates except two for which there are small but statistically significant differences. Rates for a shipment destined for a Beal's 6 and 7 county were \$1.42 lower than those on an otherwise similar shipment destined to a larger community such as Beale's 1,2,3,4 and 5 (\$35.82 vs. \$37.24).

Table IV-3

COMPARISION OF ADJUSTED REVENUE PER SHIPMENT
FOR TYPICAL SHIPMENTS BY SIZE OF
ORIGIN AND DESTINATION
1976 AND 1980

<u>Year</u>	Larger Beale's 1, 2, 3, 4, & 5		Smaller Beale's 6 & 7		Smallest Beale's 8, 9	
	<u>Origin</u>	<u>Destination</u>	<u>Origin</u>	<u>Destination</u>	<u>Origin</u>	<u>Destination</u>
1980	\$54.92	\$54.98	\$53.20	\$54.11	\$49.19	\$50.96
1976	37.12	37.24	37.95	35.82	36.24	38.57

TABLE IV-4

COMPARISION OF ADJUSTED REVENUE PER SHIPMENT
FOR TYPICAL SHIPMENTS BY BEALES CODE FOR
ORIGIN AND DESTINATION
IN 1976 AND 1980

<u>Year</u>	Large Beale's 1, 2, 3, 4, & 5		Beale's 6 & 8		Beale's 7 & 9	
	<u>Origin</u>	<u>Destination</u>	<u>Origin</u>	<u>Destination</u>	<u>Origin</u>	<u>Destination</u>
1980	\$54.92	\$54.98	\$53.72	\$55.53	\$52.50	\$52.64
1976	37.12	37.24	38.69	36.33	37.15	36.13

The adjusted rates on shipments originating in small counties were \$1.57 higher than for freight originating in SMSA's (\$38.69 vs. \$37.12) and larger Beale's (4 and 5).

By 1980, the rate structure had shifted slightly to favor smaller communities. All but one of the eight revenue estimates for small community shipments was lower than the corresponding revenue for larger communities; four were significantly lower statistically. Standard shipments originating in Beale's 6 and 7, smallest communities, Beale's 8 and 9, and noncontiguous small counties, Beale's 7 and 9, were \$1.62, \$5.73, and \$2.42 lower respectively than shipments originating in Beale's 1,2,3,4 and 5 communities.

Similarly, a standard shipment destined to a noncontiguous small community was a (significant) \$2.34 lower than a similar shipment to a larger community. The largest dollar differences in rates occurred for Beale's 8 and 9. Since there are smaller numbers of such communities these results must be interpreted with care. For example, the \$5.73 difference for shipments originating in the smallest counties was significant but the \$.02 difference for shipments destined to these locations just missed statistical significance. In 1980, the significant fact is that small community rates in 7 out of 8 cases were lower than rates to and from larger communities rather than on the magnitude of the differences.

Conclusions

Small community markets are likely to be less competitive and have lower traffic density than larger markets. Both of these factors would tend to produce small community rates that are higher than other rates. However, motor carriers have had considerable success overcoming the problem of low traffic density. There may be small community service benefits that offset potential disadvantages. These include reduced congestion, lower overhead, and the potential for more favorable labor agreements. Apparently, in 1976 positive and negative factors roughly offset each other.

By 1980, the market equilibrium had shifted. All markets had become more competitive and regulatory restraints that increase cost had been largely eliminated. While all categories of markets benefited slightly more probably because they had more regulatory problems to begin with.

Entry has been an important factor increasing competition in all parts of the industry, but small communities are unique in that, until recently, shippers often had access to a very small number of carriers. This is a continuation of a trend that started with the easing of entry in the late 1970s. The number of shippers with only one available carrier was probably greater in 1976. Of course, adding one new carrier to a monopoly market could have a dramatic effect on the competitive equilibrium.

By 1980, relaxed conditions of entry (and exit) probably reduced carrier costs, and made it possible for carriers to expand their authority. Expanded authority made it easier for them to assemble a network large enough to acquire adequate loads, reducing the costs of low traffic density. On the other hand, ICC and Congressional actions encouraging pooling and convenience interlining made it unnecessary for carriers to provide direct service unless freight demand warranted it. This also helped reduce the costs associated with low traffic density. In short, regulatory reform made it possible for carriers who wished to serve small communities to do so more efficiently. For carriers who did not wish to serve small communities, it made possible their replacement by more efficient carriers.

C. BEALES CLASSIFICATION OF COMMUNITIES

The Beales classification of communities ranges in value from one to nine; one represents large SMSA's and Beales 9 the small countries. These Beales numbers are inversely related to community size, and thus

they were designed by an employee of the Department of Agriculture, Calvin Beales. Beales called the codes "Metropolitan Adjacency Codes", and they were created to classify communities both by size-class and the degree to which the communities might be considered "rural".

The necessity of such codes is apparent to anyone that has tried to compile a list of rural communities based on population or demographic characteristics one soon discovers that there are many slightly populated communities in countries that are adjacent or very close to SMSA's. These "small" communities do not qualify as rural. They are not isolated communities. Rather, these communities are small but are often in the same station grouping for ratemaking purposes as the SMSA in the adjacent county and hence have the same freight rates. For example, Gaithersburg, MD is a small community but is hardly isolated because of its proximity to Washington, D.C. Therefore these communities are not rural communities in the sense of isolation from production and population centers. The Beales size classification hinges on the proximity of the community to an SMSA (or as an SMSA). A detailed explanation of each of the Beales code is given in Table IV-2.

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TRUCK SERVICE TO SMALL RURAL COMMUNITIES
UNDER ALTERNATIVE REGULATORY ENVIRONMENTS

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I. Introduction

The desirability of economic regulation of the trucking industry is the subject of considerable debate. In the United States, a decade of serious controversy produced the Motor Carrier Act of 1980. The new act officially signalled a significant departure from the regulatory philosophy that dominated the regulatory activities of the Interstate Commerce Commission (ICC) since the passage of the original Motor Carrier Act in 1935.¹ The act substantially reduced entry barriers in all sectors of the industry including common, contract and private haulers. The act increased ratemaking flexibility and placed new limitations on collective ratemaking.

Despite these and other major reforms contained in the act, the regulation-deregulation argument still persists. The present regulatory environment is subject to future change much like its predecessor. As well, the act does not completely eliminate statutory regulation, leaving some proponents of deregulation clamoring for more reform. At the other extreme, proponents of regulation argue that the act has gone too far and forecast the day when economic regulations will be strengthened. More importantly, the amount of regulation that actually exists will largely depend on the interpretation and implementation of the act by the ICC. The ICC will not only be guided by its own evaluation of the benefits and costs of regulation but by the evaluation of Congress which was mandated by the 1980 act to conduct oversight hearings on the effects of the act through 1985. Finally, many states have yet to make up their minds about which regulatory route to follow.

One of the basic concerns of policymakers before the passage of the Motor Carrier Act was the effect of regulatory reform on small communities.

Numerous studies were made that supported opposing sides of the controversy. The proponents of retaining a substantial regulatory framework argued that a reduction in regulation would reduce the quantity and/or quality of service to small communities. Proponents of deregulation argued that the effect of less regulations would be minimal, if not an improvement, in the quality of service available to small communities. Congressional uncertainty about the potential impact of truck deregulation on small communities is reflected in Section 28 of the Motor Carrier Act that required the ICC to conduct a study of Motor Carrier service to small communities, with emphasis on communities having a population of 5000 or less.

This paper describes an analysis of the impact of economic regulations on truck service to a cross-section of small communities in Western Canada. This evidence can be used to complement previous evidence as well as the current research mandated by law to help resolve the controversial issues surrounding regulation and service to small communities. In Section II, the issues are briefly reviewed along with a critique of the recently completed ICC study. Next, the methodology of the cross-sectional study is explained and this is followed by an analysis of rates and service between the provinces. The final section contains the conclusions and implications arising from the research.

II. Small Community Transportation Issues and Research

The ultimate question is what regulatory environment would result in superior truck service, rates, or combination of rates and service being provided to small communities.² This issue is seldom addressed directly or correctly. More often related or supporting issues are investigated. These include:

- (1a) Do small communities need regulated carrier services?
- (1b) What alternatives to regulated carrier service exist?
- (2a) Are regulated carriers meeting their service obligations?
- (2b) What is the level of satisfaction with present service to/from small communities?
- (3a) Is there any evidence of cross-subsidization favoring small community freight?
- (3b) Is small community truck service profitable?

The relationships between these questions and the basic issue are obvious. If small communities do not utilize the type(s) of service produced and encouraged by regulation, then the impact of deregulation on the welfare of a community may be minimal. Similarly, if truck service to small communities is profitable, this implies the absence of cross-subsidization favoring the small communities under the existing regulatory environment. Finally if the regulated carriers are not providing service or a satisfactory level of service, this is an indication of the failure of regulation to influence small community service.

Section 28 of the Motor Carrier Act of 1980 requires the ICC to study the impact of the act on small community service and specifically their report

... shall include an analysis of the common carrier obligation to provide service to small community shippers and an assessment of whether the Commission is enforcing such obligation ... The report shall also describe the extent to which motor carriers were providing service to small communities prior to the date of enactment of this Act, and evaluate the effect of this Act on such service. The report shall include specific recommendations regarding ways to ensure the provision and maintenance of motor carrier service to small communities.

The ICC research is thus constrained to be a time series analysis of the impact of specific deregulation measures (the Motor Carrier Act) over time. In meeting this mandate, the ICC has designed a study to identify small community satisfaction and service changes over three time intervals

Phase I - a January 1981 Survey of effects since July 1 1980

Phase II - a June 1981 Survey of effects since July 1, 1980

Phase III - a December 1981 Survey of effects since July 1, 1980.³

A major portion of the ICC study is the shipper survey. Mail questionnaires were sent out to a random sample of businesses selected from small rural communities. The survey has been completed and the overall conclusion is that there has been little change in service to small communities (from July 1980 to December 1981) and, where there has been change, it has usually been positive.⁴

Studies that compare the performance of trucking before and after regulatory change have a long history in the truck regulation controversy. Analyses of the agricultural deregulation experience in the 1950's, deregulation in Great Britain in 1967, and commercial zone expansion in recent years are prime examples. The major criticisms and lessons of these previous studies are applicable to the present ICC effort. First, a before and after study must be able to control for the simultaneous occurrence of other environmental influences. The ICC itself recognizes that it is a challenge to separate the effects of regulatory reform, the economy's cyclical movements,

and long term economic trends.⁵ Yet, in the Commission's initial report, there is no indication of such an effort. One could reasonably hypothesize, for example, that service has indeed not declined. Why should it, if the system suffers from over capacity due to the recession. Carriers under these circumstances are willing to serve less profitable markets but would the same be true when the economy begins to rise and truck capacity is strained?

The control problem could be reduced by minimizing the length of time between the "before" period and "after" period. Unfortunately, this may not allow the industry a sufficient adjustment period to bring about the steady state as opposed to the transitional phase of regulatory reform. Several factors affect the length of the transition period. First, capital decisions that were made prior to deregulation will have an influence upon current performance. Readjustments may be relatively fast for TL type carriers and less so for LTL type carriers who operate integrated systems. In spite of the high mobility of assets attributed to the trucking industry, there is justifiable doubt that long run adjustments have been completed in 1 1/2 years much less 6 months, as the ICC results implicitly imply. Compounding the technological reasons for non-instantaneous transition is the regulatory transition itself. The ultimate interpretation of the Motor Carrier Act of 1980 remains in transition as the ICC, the industry, and other parties debate their versions in court. One fact is certain; the structural and conduct adjustments arising from the Motor Carrier Act of 1980 will continue long after the ICC's December 1981 survey.

The successful before and after study must also choose an appropriate "before" and "after" period. Although the Motor Carrier Act of 1980

officially placed regulatory reform in the law books, the ICC had begun the reform process in 1977. A before and after study by Harper recognized this fact and sought to examine the experience of carriers and shippers since 1977 rather than 1980.⁶ In contrast, the ICC study focuses on changes since July 1981. This time frame makes it doubtful that a meaningful relationship between regulation and performance is being observed.

For reasons noted above, the ICC study will yield limited evidence about the true impact of deregulation. The ICC study is mandated to study a period that is too short to be able to observe the steady state effect of regulation, that does not coincide with the actual transition from one regulatory environment to another, and that is coincidental with a major economic recession.

An alternative approach to measuring the impact of regulation is the utilization of a cross-sectional approach which compares the performance of trucking under different regulatory regimes. If the degree of regulation is the only major difference in the environment of the trucking markets, then differences in performance can be associated with differences in regulation. The effectiveness of this approach lies in being able to find two or more markets which are comparable except for the degree of regulation. If nonregulatory differences do exist, one has to deduce their effect on performance so that the residual performance can be attributed to regulation.

A long tradition of research has utilized this approach, specifically to analyzing trucking regulations in Canada. Notably, two of these studies dealt specifically with the issue of cross-subsidization of rates favoring small

communities. McRae and Prescott estimated a rate model of the form;'

$$Y = W^a H^b P^c e^z$$

where: Y = average revenue per ton-mile
 W = shipment weight of shipment i,
 H = length of haul of shipment i,
 P = population of destination of shipment i,
 Z = a vector of instrumental (dummy) variables representing
 different provincial jurisdictions and commodity groups.

The model estimates the potential cross-subsidization effect in different regulatory regimes because each provincial jurisdiction is regulated differently. As shown in Table 1, the regulation of the trucking sector within each province ranges from no regulation in Alberta, to entry with rate filing regulation in British Columbia and Ontario, and to entry and rate regulation in Saskatchewan and Manitoba. The model seeks to control for non-regulatory factors by recognizing shipment characteristics in the model and by estimating regression for separate commodity groups and shipment size groups (TL versus LTL).

McRae and Prescott's general observations were that the unit price of trucking increased for shipments into smaller communities in unregulated Alberta while the exact opposite relationship is observed in highly regulated Saskatchewan and Manitoba. In Quebec there appears to be no relationship, while B.C. and Ontario appear to have a rate to population relationship somewhat

similar to Alberta's. The authors conclude that cross-subsidization almost certainly is occurring in Saskatchewan and Manitoba, probably in Quebec, probably not in B.C., and certainly not in Ontario and Alberta. They also point out the limitations to their analyses. First, there is a lack of matching cost information to verify cross-subsidization, which involves setting prices below marginal cost, and secondly, the rates charged by carriers are not the only dimensions of performance. The authors cite some evidence indicating that the overall low rates found to be charged in Saskatchewan and Manitoba in other studies may have resulted in lower quality service and/or excessively low carrier profitability.

III. Methodology

This study utilizes the cross-sectional approach to identify the impacts of economic regulation on trucking service to small communities. The study was confined to the three Western Canadian provinces of British Columbia (B.C.), Alberta (Alta.), and Saskatchewan (Sask.). Each province regulates their intraprovincial (movement within their provincial borders) trucking industries differently as shown in Table 1. Broadly speaking, Saskatchewan regulates both entry and rates, B.C. regulates entry but only requires rate filing, and Alberta regulates neither. All three provinces are concerned about the quantity and quality of truck service to less populated communities but only Saskatchewan's transportation statutes contain explicit reference towards this policy area. Certain exemptions to regulation exist, particularly in Saskatchewan, but these generally do not affect the regulations pertaining to the movement of general freight.

These regulatory differences are one part of the economic laboratory . The other ingredient is the ability to control for non-regulatory factors that affect the performance of trucking, e.g. create ceteris paribus conditions. This is accomplished initially by choosing communities with similar demographic and academic characteristics. Five triplets of communities in each province (15 in all) were selected on the basis of population size, distance from population centres, and economic makeup. The study communities are identified in Table 2. All communities have populations (according to the latest census) of less than 5000 and none have any significant manufacturing base.

A personal interview was used to collect relevant information from two types of sources in each community: a community representative and a set of shippers/receivers. The procedure for each community was to interview the community representative in order to supplement the profile of businesses obtained previously from external sources.

The interviewer then selected a sample of businesses to contact based on the following criteria:

1. select firms likely to require some form of truck transportation, e.g. eliminate grain elevators, farms, etc.
2. select one firm only if several firms of the same type exist, e.g. select one grocery store out of four but interview more if one store is an independent and the other is a chain operation,

3. select firms so that every major business sector is represented, e.g. manufacturing, retailing, forestry, etc.

The survey instrument was a 26 question, 5 part questionnaire filled out by the interviewer at the time of the interview. The interviews were conducted between July and October 1982 and resulted in a total of 153 interviews distributed according to Table 2.

IV. Analysis of Rates

Previous research indicates that the overall level of rates in each of the three provinces are ranked in the following ascending order: Saskatchewan, Alberta, British Columbia.⁸ This is particularly true for the movement of end products and fabricated materials which move as general freight. As noted in Section III above, there is also evidence of cross-subsidization of rates favoring smaller communities in Saskatchewan but not in B.C. and Alberta.

One portion of the interview requested the respondent to make available representative freight bills or other documentation of actual freight movements. The total rate, origin or destination (depending on whether the shipment was inbound or outbound), weight, and other information was collected. 171 cases met two criteria; the shipment weighed at least 50 pounds but less than 10001 pounds and the origin or destination was within the province. The provincial limitation preserved regulatory homogeneity within each province since provincial regulations for shipments moving across

provincial boundaries are not necessarily identical to the regulations applicable to freight moving within the province. The weight boundaries limit the sample to the type of freight for which truck service is most applicable.

The data was fitted to the following logarithmic model in order to estimate the effect of regulation.

$$(1) \quad \log \text{RTM} = a + b_1 \log W + b_2 \log H + d_i D_i$$

where

RTM = rate per ton mile,

W = weight of shipment,

H = distance of shipment,

D_1 = 1 if B.C., 0 otherwise,

D_2 = 1 if Sask, 0 otherwise.

The value of d_i represents the effect of regulations of the respective province relative to unregulated Alberta. The model was calibrated twice, once comparing British Columbia with Alberta and once comparing Saskatchewan with Alberta and using the appropriate D_i in each case.

The B.C./ALTA. model results were:

N = 70

$R^2 = .6086$

$$(2) \quad \log \text{RTM} = 6.4238 - .4924 \log W - .7021 \log H + .0895 D_1$$

(.0605) (.1552) (.1819)

The ALTA./SASK model results were:

N = 144

$R^2 = .7055$

$$(3) \quad \log \text{RTM} = 6.8797 - .4657 \log W - .8271 \log H - .1876D$$

$$(.0285) \quad (.1426) \quad (.0887)$$

All variables are statistically significant at the $\alpha = .05$ level, with the exception of the regulatory effect variable of B.C. (relative to Alberta). The test of the homogeneity of the slope coefficients between Alberta and Saskatchewan populations did not reject the hypothesis of a common regression slope.⁹ Consequently, it is valid to use the coefficient of the dummy variables to make a point estimate of the rate level differences between Alberta and Saskatchewan rates. The value of d_2 is significant at the $\alpha = .05$ level.

Since $d_1 < 0$, the ratio of Alberta rates to Saskatchewan rates is

$$\text{Ratio} = \frac{1}{\exp(d_3)} = \frac{1}{\exp(-.1876)} = 1.20$$

On the average, Alberta rates are 20% higher than comparable Saskatchewan truck rates to small communities.

These statistical results indicate that the rate level is generally lower for Saskatchewan shippers of freight in small communities than in Alberta or British Columbia. British Columbia rates are not significantly different from Alberta rates. Before one can conclude that regulation (as utilized in Saskatchewan) is beneficial, one must examine the other dimensions of performance, the quality of service.

V. Analysis of Service

It is frequently asserted that a profit maximizing firm will adjust the level of its service to correspond with the rate level. Therefore, it is necessary to compare service levels to determine whether the regulatory effect identified in the previous section is strengthened or offset by this dimension of performance. Previous research, particularly in the U.S. is deficient in this area because there exists no judgment free benchmark of the quality of service when all service is regulated. This is quite evident in numerous survey studies where the data collected could be interpreted to indicate that for-hire carrier service is adequate or inadequate.¹⁰

The present study sought to create bias free ratings of service across different regulatory jurisdictions. The Alberta environment provides the benchmark for evaluation. The selection of similar types of respondents in smaller communities reduces non-regulatory influences. In addition, only the ratings of respondents who were identified as shippers of Inbound-LTL freight were used in this analysis. Respondents in each province were asked to evaluate a variety of service characteristics for the for-hire carrier most frequently used for LTL freight and several aspects of overall LTL service by all alternatives. These ratings are summarized in Tables 3 and 4.

In Table 3, the evaluation of the LTL service provided by the most frequently used for-hire carrier is shown. The nine service dimensions were identified as important measures of performance in at least one province (see Appendix A). The percentages are calculated on a base that omits respondents who checked the characteristic as not applicable. The Chi Square (χ^2) and significance (SIG.) columns indicate the relationship between the respective row province and Alberta.

There are a number of bases for ranking service performance between provinces. Scanning the "Excellent" column, one can observe that Alberta's performance is rated highest in 7 out of 9 characteristics. Scanning the "Excellent" and the "Quite Good" columns and cumulating the two, one can observe that Alberta's performance is again rated highest in 7 out of 9 characteristics (although the specific ones are slightly different). If we use the criteria of "adequate" or better, 8 out of 9 characteristics favor Alberta. Finally if we assume the validity of the ordered rating scheme, we observe (from the χ^2 and SIG columns) that Alberta's service is significantly superior (at $\chi = .05$) to British Columbia's service with respect to Adherence to Schedule and Handling of Claims, while Alberta's service is significantly superior to Saskatchewan's service with respect to Service Reliability, Speed of Delivery, and Handling of Claims.

VI. Analysis of Rates and Service and a Methodological Note

The respondents were also asked to evaluate the overall service (rates and quality) provided by its primary for-hire carrier and by all carriers providing LTL service. These responses are summarized in Table 4. As in the analysis of Table 3, the figures indicate that the total package of service in Alberta is superior to that provided in British Columbia or Saskatchewan but this superiority is statistically significant only between Alberta and Saskatchewan.

The results of the rate, service, and overall rate/service comparisons can be summarized as follows:

1. The price of small community trucking service is lowest in Saskatchewan and higher in both Alberta and British Columbia,
2. The quality of small community trucking service is rated highest in Alberta, slightly worse in British Columbia, and much worse in Saskatchewan,
3. Overall, the quality of truck service and rates provided to small communities is not very different between Alberta and British Columbia but generally rated lower in Saskatchewan.

The combination of comparisons would suggest that while the type of regulations existing in Saskatchewan has benefited the small community shipper in terms of lower direct costs, it has been at the expense of reduced service quality. The overall evaluation (item 3 above) raises the possibility that the tradeoff is unfavorable and that Saskatchewan shippers would be favorably inclined to an increase in rates provided there is an increase in service.

This section ends with several methodological reservations. First, one can observe that the shipper's satisfaction with rates across provinces does not vary significantly yet it was concluded in the rate analysis that Saskatchewan rates are much lower than Alberta rates on similar movements. This brings into question what benchmarks the respondents are using themselves to evaluate service. For example, the expectations of shippers may be higher in regulated provinces where regulation is "supposed" to result in better service. Consequently, the performance evaluations could be understated (relative to Alberta) in the regulated provinces.

Secondly, it must be remembered that only five communities were selected in each province. Their experiences are not necessarily representative of small community service in all communities of the three provinces.

VII. Conclusions

The purpose of this study was to evaluate the impact of regulation on the quality of trucking services to small communities. The different regulatory environments of the three Western Canadian provinces provide the economic laboratory to control for regulation. The study is unique in that a benchmark for evaluation exists, controls for shipper heterogeneity and other demographic factors are used, and both rates and quality of service are evaluated. The study finds that Saskatchewan's regulatory policy, containing both rate and entry controls, has resulted in lower rates but worse service to small communities relative to unregulated Alberta. Some minor but no substantial differences exist between the performance in British Columbia and Alberta.

The immediate implications for U.S. regulatory policy depend on the comparability of the U.S. regulatory environment with those of the Canadian provinces. Saskatchewan's motor carrier regulations are probably stricter than those regulations administered by the ICC (prior to 1977) and certainly better enforced. In contrast, British Columbia motor carrier regulations are very similar to U.S. entry regulations prior to 1977 and to U.S. rate regulations after the Motor Carrier Act of 1980. This would suggest that the deregulation movement since 1977 in the U.S. could have resulted in relative rate increases along with relative quality of service increases in the truck

service to small communities. However, it is not necessary to completely eliminate entry control as shown by the British Columbia experience. The first phase of the ICC small community study does show service to be increasing. Unfortunately this observation may be temporary and no rate analysis was conducted.

This study ends with a reemphasis of the major limitation to this study discussed earlier. The survey sample consisted of respondents from a set of 15 communities selected to maximize homogeneity in small community characteristics. A larger sample of communities needs to be surveyed in order to validate that these results are representative of the truck rate and service levels to all small communities.*

*Transport Canada has extended the original research grant for this study to survey 15 more communities in 1982.

FOOTNOTES

1. Much of the Motor Carrier Act of 1980 was an endorsement of policies implemented by the Interstate Commerce Commission since 1977. Thus partial deregulation occurred prior to 1980. See D. V. Harper, "The Federal Motor Carrier Act of 1980: Review and Analysis", Transportation Journal, Vol. 20 (2), (Winter 1980), p. 29.
2. This assumes that even broader issues, such as "should small community life be promoted?" and "is good transportation necessary for small community development?", have been answered positively. For a discussion of the broader and narrower issues concerning truck regulation and small communities see R. Hirshhorn, Trucking Regulation In Canada: A Review of the Issues. Working Paper No. 26, Economic Council of Canada (1981), pp. 151-162.
3. The complete methodology of the ICC study is explained in Interstate Commerce Commission, Letter to Elmer B. Staats, Controller General, U.S. G.A.O., dated November 5, 1980 with attachments.
4. Interstate Commerce Commission (ICC), Small Community Service Study (Sept. 1982) p. 3-4.
5. ICC, Interim Report, The Effect of Regulatory Reform on the Trucking Industry: Structure, Conduct and Performance (June 1981), p. 9.
6. D. V. Harper, "Consequences of Reform of Federal Economic Regulation of the Motor Trucking Industry", Transportation Journal, Vol. 21(4) (Summer 1982), pp.35-58.
7. J. J. McRae and D. M. Prescott, "The Structure of Rates In The Canadian For-Hire Trucking Industry: A Further Analysis", a report prepared for the Economic Council of Canada, July 1979.
8. J.J. McRae and D.M. Prescott, "An Econometric Analysis of the Effectsof Regulation on the Canadian Common Carrier Industry", Studies of Trucking Regulation: Vol. II, Working Paper No. 3, Economic Council of Canada (1980), p. 136.
9. J. Johnston, Econometric Methods (1972), pp. 192-204.
10. See Policy and Management Associates, Inc., The Impact on Small Communities of Motor Carriage Regulatory Revision, prepared for the Committee on Commerce, Science, and Transportation, U.S. Senate (Washington D.C.: U.S. G.P.O., 1978) and American Trucking Association, Inc., "Analysis and Critique of: Policy and Management Associates, Inc.'s 'The Impact...of...Regulatory Revision'" (1979).

APPENDIX A

The Relative Importance of Quality of Service Characteristics

The quality of service provided by a carrier to a community has many dimensions. The study sought to focus upon those characteristics that were most important to the respondents in the sample. Each respondent was asked to rate a set of service characteristics as very important, important, not important or not applicable. In Table A-1, the percentage of respondents which rated each characteristic as very important, or very important or important is shown. For this analysis we assume that the most important service factors are those which are rated as very important by at least 50 percent of the respondents or rated as very important or important by at least 75 percent of the respondents.

Using this arbitrary criteria we observe the following factors as important in all three provinces:

1. Rates,
2. Service Reliability,
3. Speed of Delivery,
4. Handling of Claims,
5. Damage Control.

The following factors are important in two of three provinces:

1. Adherence to Schedule,
2. Liability coverage,
3. Tracing.

In all three cases, about 70 percent of the responses in the remaining province rated the respective characteristic as very important or important.

Finally, we observe that Availability of Rate Information is important to Alberta shippers but much less to shippers in other provinces. This is consistent with the fact that rates are not required to be filed in Alberta.

The body of the study shall focus on the eight characteristics consistently rated as important in two or more provinces.

TABLE 1

Regulation of Canadian TruckingIntraprovincial

<u>Province</u>	<u>Entry</u>	<u>Rate Filing</u>	<u>Rate Filing and Approval</u>	<u>Rate Prescription</u>
British Columbia (B.C.)	Yes	N/A	Yes	No
Alberta (Alta.)	No	No	No	No
Saskatchewan (Sask.)	Yes	N/A	N/A	Yes
Manitoba (Man.)	Yes	N/A	N/A	Yes
Ontario (Ont.)	Yes	Yes	No	No
Quebec (Que.)	Yes	N/A	Yes	No
New Brunswick (N.B.)	Yes	Yes	No	No
Nova Scotia (N.S.)	Yes	Yes	No	No
Prince Edward Island (P.E.I.)	Yes	Yes	No	No
Newfoundland (NFD)	Yes	N/A	Yes	No

TABLE 2

Communities Surveyed for Study and Selected Characteristics

Province	Community	Population (1976 Census)	Distances from Major Population Centre (Miles)	No. of Respondents
B.C.	Golden	3100	>100	16
B.C.	Fruitvale	1485	>100	8
B.C.	Clearwater	1100	78	9
B.C.	Clinton	900	80	8
B.C.	Canal Flats	834	75	6
ALTA.	Slave Lake	4328	>100	16
ALTA.	Smoky Lake	1121	74	11
ALTA.	Boyle	576	75	6
ALTA.	Hardesty	534	60	8
ALTA.	Sedgewick	825	70	6
SASK.	Kindersley	3784	>100	23
SASK.	Kelvington	1128	75	11
SASK.	Iuseland	728	65	9
SASK.	Quill Lake	555	100	6
SASK.	Watson	912	100	10
TOTAL RESPONDENTS				153

Evaluation of LTL Transportation Service of Most Frequently Used For-Hire Carrier*

Characteristic	Province	Excellent	Quite Good	Adequate	Minimally Acceptable	Unsatisfactory	N	χ^2	SIG
Rates	B.C.	5.6	5.6	27.8	11.1	50.0	18	4.93	.29
	ALTA.	13.6	13.6	36.4	18.2	18.2	22		
	SASK.	6.3	25.0	25.0	18.8	25.0	16	1.71	.79
Service Reliability	B.C.	17.4	39.1	21.7	8.7	13.0	23	4.61	.33
	ALTA.	25.9	51.9	18.5	0.0	3.7	27		
	SASK.	3.0	21.2	51.5	9.1	15.2	33	18.63	.00
Adherence to Schedule	B.C.	38.5	23.1	7.7	23.1	7.7	13	10.53	.03
	ALTA.	19.2	61.5	15.4	0.0	3.8	26		
	SASK.	12.5	41.7	29.2	12.5	4.2	24	5.63	.23
Speed of Delivery	B.C.	17.4	30.4	17.4	13.0	21.7	23	8.42	.08
	ALTA.	25.9	48.1	22.2	0.0	3.7	27		
	SASK.	6.3	25.0	46.9	12.5	9.4	32	12.49	.01
Handling of Claims	B.C.	7.7	7.7	7.7	30.8	46.2	13	9.69	.05
	ALTA.	29.4	29.4	17.6	17.6	5.9	17		
	SASK.	0.0	13.0	8.7	17.4	60.9	23	16.58	.00
Liability Coverage	B.C.	11.1	22.2	22.2	22.2	22.2	9	1.96	.74
	ALTA.	13.3	26.7	40.0	13.3	6.7	15		
	SASK.	0.0	7.1	21.4	28.6	42.9	14	9.01	.06
Damage Control	B.C.	11.8	29.4	17.6	11.8	29.4	17	2.82	.59
	ALTA.	11.5	46.2	23.1	7.7	11.5	26		
	SASK.	3.1	31.3	15.6	12.5	37.5	32	6.79	.15
Tracing	B.C.	0.0	36.4	9.1	18.2	36.4	11	4.66	.32
	ALTA.	14.3	50.0	14.3	14.3	7.1	14		
	SASK.	0.0	22.2	16.7	33.3	27.8	18	7.30	.12
Availability of Rate Information	B.C.	10.0	70.0	10.0	0.0	10.0	10	2.34	.50
	ALTA.	21.7	43.5	26.1	0.0	8.7	23		
	SASK.	4.2	45.8	33.3	0.0	16.7	24	3.65	.30

*Ratings refer to services of specific for-hire carrier most frequently used if identified or group of carriers furnishing inbound-LTL truck service.

TABLE 4
Evaluation of Inbound-LTL Transportation Environment-LTL/Inbound Shippers

	Quite			Minimally		Unsatis-	N	χ^2	SIG.
	Province	Excellent	Good	Adequate	Acceptable	factory			
General									
Overall Eval-									
uation of all	B.C.	13.6	54.5	22.7	4.5	4.5	22	3.01	.56
LTL Service	ALTA.	22.2	51.9	25.9	0.0	0.0	27		
	SASK.	3.1	25.0	50.0	21.9	0.0	32	15.46	.00
Overall Eval-	B.C.	25.0	30.0	25.0	5.0	15.0	20	1.58	.81
uation of	ALTA.	25.0	42.9	17.9	7.1	7.1	28		
Primary LTL									
Carrier	SASK.	6.1	24.2	36.4	21.2	12.1	33	9.56	.05

Importance of Transportation Service Characteristics

PROVINCE	B.C.	ALTA.	SASK.
Response Service Character- istic	Very Important or Important	Very Important or Important	Very Important or Important
RATES	42.5	83.8*	49.1
SERVICE RELIABILITY	63.4*	89.5*	67.9*
ADHERENCE TO			
SCHEDULE	26.2	81.6*	57.7*
SPEED OF DELIVERY	61.0	89.5*	75.5*
SPEED OF PICKUP	25.0	20.5	35.8
HANDLING OF CLAIMS	24.4	28.9	32.1
LIABILITY COVERAGE	26.8	17.9	26.4
TRACING	22.0	18.4	24.5
DAMAGE CONTROL	57.5*	71.1*	49.1
SINGLE LINE SERVICE	22.5	29.7	7.5
LOCATION OF TERMINALS	7.9	8.3	3.8
NO. OF DESTINATIONS	10.0	2.7	5.7
AVAILABILITY OF			
RATE INFO.	10.0	10.8	9.4
AVAILABILITY OF			
EQUIP.	24.4	16.2	7.8

*Characteristic rated by at least 50% of respondents as very important or rated by at least 75% of respondents as very important or important.

AN INVESTIGATION AND ANALYSIS OF THE USE OF
MOTOR CARRIER SERVICES BY SMALL AND LIMITED
RESOURCE OPERATORS IN NORTH CAROLINA

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ABSTRACT

The responses to 1,089 questionnaires to rural shippers and receivers in North Carolina indicate that the primary mode used by them were trucks, either private carriage, UPS, or common motor carriers. The most important factors that determined mode utilization were indicated as cost, reliability of transit time and door-to-door service.

The majority of respondents felt that the service level they received was about right for their needs and overall service at least adequate. The areas of greatest concern were cost of transportation services, claims settlement and interlining, especially for the users of common carriers.

The users of common carriers rated service lower than did users of other modes on the aspects of costs, claims settlement, interlining and overall service. Many of the users of common carriers did not know if the carriers they used were regulated by either the ICC or the state utility commissions.

Most of the common carrier users believed that lowering regulatory entry barriers would increase the number of carriers serving rural firms. Most also believed that reducing exit restrictions would decrease the number of carriers serving them, that increased rate flexibility would lead to reduced rates, and that removing commodity restrictions would not result in more carriers offering service to their firms.

Geographical and population differences between the firms' locations seemed to play only a minor role in service quality and opinions on the effect of regulatory changes. However, the firms in the far west region of North Carolina had fewer alternatives to common carriers and interlined shipments more than did the firms in the other two regions of the state.

This interlining arrangement, contrary to other hypotheses, seems to reduce the adequacy and increase cost of service. Changes in regulation, allowing for exit of even

-2-

more interstate carriers of LTL general freight would increase the necessity for interlining and thereby possibly reduce service adequacy.

Since the firms in the western' areas of the state had fewer alternatives to common carrier service, these firms would be more affected by any common carrier service charges. Therefore, this area, especially manufacturing firms, should be closely monitored for any possible effects of regulatory changes.

PRELIMINARY DRAFT

QUALITY OF SERVICE IN THE HOUSEHOLD GOODS CARRIER INDUSTRY

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ABSTRACT

This paper reports the progress to date of a study to assess the effects of the Household Goods Transportation Act of 1980 (HGTA). The main issue which prompted passage of ^{this legislation was} the unsatisfactory level of the quality of services provided by the household goods carriers. The first task, therefore, was to explain why regulated industry would produce inferior quality of services when the opposite would have been expected. Thus, we demonstrate that the low-level of regulated rates is a sufficient condition for the industry to produce inferior quality services. However, we find it difficult to test the hypothesis that the rate level permitted by the ICC was indeed "too low."

We find no evidence that the low quality of services is due to agency systems employed by the industry, nor that the HHG carriers employ inferior inputs. However, we are continuing our efforts in examining the possible reasons for the alleged failure of carriers to exercise control over their agents.

Neither do we find the evidence that the consumer ignorance or lack of information is responsible for low quality services. Finally, we examine the possibility that it is the regulation itself and not some peculiar characteristic of the industry that has been responsible for the majority of consumer complaints.

It should be noted that discovery of the correct explanation is more than of academic interest. It is needed to assess the impacts of the HGTA as well as other proposed remedies since these policy changes are not likely to be effective unless they are directed at the causes of poor performance and not at the symptoms of it.

1. Introduction

The issue of economic efficiency, which motivated much of the regulatory reform in the rest of the motor carrier industry and which was equally applicable to household goods carriers, played a minor role in the passage of the Household Goods Transportation Act of 1980 (HGTA). Instead, the main issue was the alleged unsatisfactory performance of the household goods moving industry. In fact, the regulatory reform effort was spearheaded by the U.S. Office of Consumer Affairs.

Although this evidence is difficult to evaluate without some standard of reference, it is generally assumed that the quality of services provided by the household goods carriers has not been satisfactory. However, if this assumption is accepted it becomes necessary to explain why this regulated industry prior to HGTA had been producing inferior quality services.

The increasing number of consumer complaints received by the Interstate Commerce Commission, which by 1978 reached 21,000, has been cited as the main evidence of unsatisfactory performance.^{1/} This was slightly less than 2 percent of all shipments transported by the HHG carriers. Similarly, during 1980 the Commission received 18,942 complaints on 1,082,355 shipments transported. Thus, complaints accounted for 1.8 percent of all shipments.^{2/}

Morash (1981) offers the following explanation. The rates permitted by ICC in this industry were "too low." This forced HHG carriers to adopt an "agency system" type of operation in which carriers rely on agents and owner-operators for provision of services rather than relying on carrier owned vehicles driven by employees. The agency system, in turn, results in inferior quality services.

One purpose of this paper is to evaluate the above explanation. In the next section we will argue that "low" level of rates permitted by the regulatory agency is a sufficient condition for low quality services and in the following section that there is no necessary relationship between agency system and the quality of services.

The second purpose of the paper is to pursue the search for an explanation for low quality services further. Thus, in Section 3 we also examine the allegation that HHG carriers use inferior factors of production and the market structure and institutional characteristics that may explain the alleged failure of HHG carriers to exercise control over their agents and owner-operators. Section 4 is devoted to discussion of a possibility that consumer ignorance and/or lack of information was responsible for inferior quality services and Section 5 to speculation that the regulation itself may have been responsible for most of the complaints. Finally, Section 6 summarizes the findings and presents their implications on the probable effect of HGTA on the quality of services provided by the industry.

FOOTNOTES

1/ ICC (1979)

2/ ICC (1981)

2. Low Level of Rates as the Cause of Poor Quality Services

A priori one would expect that, other things being equal, a regulated industry would produce higher quality services than a competitive industry. This expectation is based on results of a number of studies.^{1/} However, did ICC allow rates to be set above competitive rates?

One can easily demonstrate that if rates were indeed set ^{above} ~~below~~ competitive equilibrium rates this would be sufficient for the industry to produce ^{supra competitive} ~~inferior~~ quality services. However, for this conclusion to hold three following conditions have to be satisfied: (1) Regulated rates have to be set above competitive rates; (2) Entry into the industry has to be restricted; and (3) Some forms of nonprice competition must be possible.

*a
ner?* { Given these three conditions, higher quality services would result from dissipation of monopoly rents through non-price competition. An immediate corollary to this argument is that if rates are set below ^{the} competitive level, ^{the} quality of services would decline to the level below what would have been provided by a competitive industry. This corollary is implied by Douglas and Miller's discussion of non-price competition in the domestic air transport industry.^{2/}

"Even though entry by firms into specific markets is strongly constrained, nonprice competition tends to raise or lower average costs per passenger carried so that in equilibrium it is equal to price. That is, nonprice or quality rivalry in competitive markets tends to eliminate excess profits or "monopoly rents," which would perhaps be expected, given an absence of price competition in conjunction with blocked entry; such rivalry also tends to eliminate losses where the average cost of a standard service rises above price." (Emphasis added.)

The impact of the level of regulated rates on the quality of service can be illustrated quite clearly using the model developed by White (1972). Assume that the product provided by the industry can be separated into two components,

a basic service component and a quality service component. For example, White defines air service between two points as basic component and inflight meals as a quality component. In the case of HHG carriers, movement of goods between two points would be a basic service and more timely pickup and delivery or more accurate estimates would be a quality component. *(also, reduced damage, better claims settlement)*

Redefining White's model in terms of the HHG industry we assume that the industry produces two outputs, transportation of household goods between two points, denoted by t , and quality components, denoted by a . The market demand functions for these outputs are either complementary or, in the limit, independent. Denote these functions as

$$Q_t = Q_t(P_t, P_a)$$

$$Q_a = Q_a(P_a, P_t)$$

where P represents price per unit of service provided, Q_t is the total quantity of trips demanded, and Q_a is the quantity of quality components demanded per trip. The total quantity of quality components demanded is $Q_t Q_a$. Under purely competitive conditions profits for an individual firm will be defined as

$$\text{Profit} = P_t q_t + P_a q_a q_t - C_t q_t - C_a q_a q_t$$

where C represents the cost of providing one unit of the service and q the quantity provided by an individual firm.

This formulation yields no surprises. Each carrier will provide transport services and provide additional quality of service components up to the point where price equals unit costs. However, the quality of service provided to different customers will vary depending on the individual customer's demand for quality components. Thus, some customers will be receiving relatively large quantities of quality components (and paying for them) while others will be receiving less.

In a price regulated industry where firms compete by varying the quality of service the demand becomes:

$$Q_t = Q_t (P^*, Q_a)$$

where P^* is the regulated price for all services provided (not just the basic service) and the quantity demanded is now a function of the quality of the service provided reflected by Q_a , the quantity of quality components. Given this market demand function profits for an individual firm are defined as:

$$\text{Profits} = P^* q_t - C_t q_t - C_a q_t q_a$$

and maximum profits occur when

$$q_a (1 + e^{-1}) = (P^* - C_t) / C_a$$

where e is the elasticity of q_t with respect to q_a . In an industry composed of a large number of firms, e will be large (infinite in a purely competitive situation) and e^{-1} will be effectively zero. Thus, the quality components will be provided up to the point where zero profits are being made on each customer, i.e., until $q_a C_a = P^* - C_t$. Each customer will be receiving the same amount of quality component, and ceteris paribus, the higher the price, the more quality each customer receives, and the lower the price, the less quality each customer will receive. In other words, quality of service under regulation could be higher or lower than under competition depending on the level of regulated rates.

Was the level of regulated rates in the HHG carrier industry set too low and resulted in the low quality services? Morash (1981) indeed argues that the rate level in the HHG industry was "depressed" and offers the following evidence to support his argument:

- (1) Negative correlation between the percentage of tractors and trailers provided by the carrier (rather than by his agents and owner-operators) and carrier's financial performance;

- (2) Findings of ICC studies that owner-operators are "hard pressed" and that revenue divisions were extremely low;
- (3) Complaints found in the trade press.

This evidence, however, is not very satisfactory. The explanation for the observed correlation is provided in the next section and is not attributable to the low level of freight rates. Similarly, owner-operators were in poor financial shape in other sectors of the motor carrier industry as well.^{3/} Furthermore, industry complaints are not acceptable unless they are confirmed by independent evidence.

Is there any reason to expect the ICC to depress the rate level in the HHG carrier industry? Breen (1977a) drawing on implications of the theory of regulation developed by Peltzman (1976) argues that there is. Peltzman's theory, based on earlier work of George Stigler, explains the absence of pure producer protection. It is based on the premise that regulators have the power to tax the wealth of one group (say consumers) for the benefit or another (say producers). According to the theory regulators will transfer wealth between groups, subject to a constraint on total wealth, in a manner that maximizes political support. That is, in a manner that maximizes the majority in favor of the regulator.

The theory has several significant implications for the regulatory process. One of the most important that in general small groups will ^{be} the beneficiaries of regulation. The winning group will be limited in size because, although larger groups would generate more votes, greater numbers would reduce per capita benefits and increase the cost of organizing the group. Another implication is that the more political opposition the tax is likely to generate the less likely the imposition will become or the smaller the tax is likely to be.

"diffuse
benefits"
degree of
organization
of a
group

A priori one might argue that since HHG carriers serve large numbers of consumers and since many of them are infrequent users of HHG services, the effective opposition to the transfer of wealth would be small. It would be too costly to organize consumers into an effective political coalition and the per capita benefits of such a coalition would likely to be less than per capita costs.

However, the industry provides services directly to consumers. The rate setting, therefore, is likely to attract attention of existing consumer advocate lobbies. This provides a relatively low cost form of political opposition to the HHG industry. These groups already exist and their organization and operating costs will not be borne entirely by the customers of the HHG carriers. During the past decade-and-a-half, consumer groups have been concerned with HHG carriers. In fact, both Consumer Reports and ^{the} Ralph Nader study group have criticized the ICC and the HHG carriers (Breen, 1977).

The existence of politically powerful consumer groups would tend to mitigate the tendency of the regulators to transfer wealth from consumers to producers and, if the consumer advocates were powerful enough (in terms of the votes they could offer) regulators could respond by reducing rate level and thereby causing quality of service in the industry.

The empirical test of the hypothesis that the low level of regulated rates was responsible for inferior quality services is rather difficult. The fragmentary available data are not conclusive. For example, if the profit levels in the HHG carrier industry were indeed depressed, the value of operating certificates should be lower than in other sectors of the motor carrier industry. Breen (1977a) examined 103 HHG carrier certificates transferred during the period from January 1970 to August 1973 and estimated the average value at \$10,387. Frew (1981) has estimated the following "typical" certificate values by type:

Regular Route, General Commodity	\$40,179
Irregular Route, General Commodity	34,188
Specific Commodity	9,968

Thus, it appears that certificate values in the HHG sector were about the same as in other special commodity sectors but significantly lower than in general commodity carriage.

which proves nothing unfortunately!

Needless to say, we intend to develop alternative ways to test the above hypothesis.

thank Walter!

Another interesting possibility is that the inferior quality of services may be due to cross-subsidies. ~~Section 22.1.1.1~~ Section 22 of Part I of the Interstate Commerce Act prevents the ICC from exercising ^{its} minimum rate powers with respect to shipments for the Department of Defense. Breen (1977a) reports that military HHG shipments account for approximately one-third of all interstate shipments and that the rates the Department of Defense has obtained through negotiation with the industry have been between 1.8 to 19.5 percent lower than the regulated rates, depending on point of origination.^{4/}

and maybe about 20% today (provided cite?)

DOD monopoly Power

The fact that the negotiated price paid by the Department of Defense is less than the regulated price directly implies that the existing regulated price is higher than it would be if the Department of Defense were not excluded. This is easy to show. First, under regulation, firms will adjust capacity and other non-price services until economic profits are zero. That is

$$0 = PX - TC(X)$$

where P is the regulated price, X is total output of a given firm, and TC is the total cost to the firm of supplying X. When part of the industry is exempted from the price regulation, in this case, the Department of Defense, the relationship becomes

$$0 = P_r X_r + P_u X_u - TC(X_r + X_u)$$

where the subscripts r and u refer to the regulated and unregulated portions respectively. If X can assumed to be constant (or equivalently, inelastic demand for X), then $P_u < P_r$ implies that $P_r > P$.

The mechanism behind the cross-subsidy is that as the Department of Defense price is determined through netotiation, it is essentially a marginal cost price. The regulated price (which in this case is greater than the negotiated or marginal cost price) must be equal to

$$P_r = AC + (AC - MC) X_u / X_r$$

where MC is marginal cost (equal to P_u) and AC is average cost. Given the assumption of fixed demand and the assumed conditions, AC must be greater than MC.

but
Some
firms
are
exclusively
DoD
carriers.
explain?

Consequently, it is possible to have higher costs, higher rates and poor quality of services in the regulated sector and all of these could be attributable to the cross-subsidy.

FOOTNOTES

1/ For a listing of these studies see Douglas and Miller (1974), Chapter 4, footnote 13.

2/ Douglas and Miller (1974), p. 44.

3/ For further discussion see Miklius (1982).

4/ For shipments ranging in weight from 4,000 to 8,000 pounds and ranging in distance from 200 to 1,200 miles.

3. Agency Systems as a Cause of Poor Quality Services

In the preceding section we have argued that the low level of permitted rates is a sufficient condition for the regulated industry to produce inferior quality of services. According to Morash (1981), however, it is the agency system itself that is the ultimate cause of the poor quality of services.^{1/} His conclusion is based on a set of linear regressions with various carrier service and financial performance measures as the dependent variable and carrier structural characteristics such as the percentage of shipments booked by agents, the intensity of owner-operator usage, etc., usually as a single independent variable. Although the explanatory power of the estimated equations is generally poor, a number of coefficients are statistically significant at the specified level. That is, there is a negative correlation between the extent to which agents and owner-operators are being utilized and the performance measures and the positive correlation of the same variables with profitability.

The problem is that correlation between two variables does not imply causation which as to be established on theoretical grounds. But Morash merely offers the following statements

"Turning to the vanline performance phenomenon of inferior service yet enhanced carriers profitability, the explanation would be that a depressed level of rates forces a carrier to adopt a service-deficient organizational form. In particular, a vanline organizational form transfers investment cost, investment risk and operating costs to independent agents and owner-operators." ^{2/}

As an explanation, this statement is clearly unsatisfactory.^{3/} There is no necessary relationship between organizational form that transfers investment cost, investment risk and operating costs to others and quality of goods produced.

The correlation between the extent to which agents and owner-operators are used and profitability is relatively easy to explain. Garrod and Miklius (1983) have shown that when demand fluctuates, the use of agency system is more efficient than the use of carrier-owned assets even if the average cost of the firm using agency system at the minimum point is higher than the average cost of the firm using its own assets and employees.

However, it is likely that the firm using agency system would have a lower average cost curve. Breen (1977) argues that a HHG carrier performs three main functions: booking, line-haul and matching booked shipments with available capacity. There are differences in economies of scale in booking and line-haul operations but there are significant economies of scale in matching booked shipments with available van capacity. Thus, the optimum firm would consist of a large dispatching department and would rely on agents and owner-operators. Since the rate level under regulation is determined using some industry-wide standard (e.g., operating ratio), it is not surprising to find that carriers relying on agency system are more profitable.

The correlation between agency systems and poor performance is more difficult to explain. One possible explanation is that the HHG carriers attract inferior agents and owner-operators, which, in turn, is due to lower remuneration. For example, O'Neal at the hearings stated that owner-operators in the HHG industry received 50 percent of revenue on any particular load vs 75 percent of revenue in the other sectors of the trucking industry.^{4/} These percentages, however, were disputed by industry spokesmen. According to one ICC survey cited by Master (1980) in 1977 HHG carriers paid 50 to 65 percent of line-haul revenues if the owner-operator provided only the tractor, and 60 to 80 percent for tractor and trailer.^{5/} All other categories of carriers paid 60 to 75 percent for tractor only, and 70 to 90 percent for tractor and trailer. Maister, however,

cautions that no conclusions can be drawn from the comparison of these percentages because the generally low percentages in the HHG sector reflect not only high rates per ton-mile existing in this industry, but also the fact that it is common industry practice for owner-operators to retain up to 100 percent of charges for packing and unpacking that they perform. Furthermore, the differences in the percentages may merely reflect on who is required to pay such ancillary charges as fuel taxes, tolls, base plates, insurance, etc. Breen (1977) estimates that owner-operators in the HHG sector were receiving approximately 65 percent of line-haul revenue. It does not appear, therefore, that differences in remuneration could have been that important.

A somewhat different version of the same explanation was offered by two owner-operators interviewed by one of the authors. They argued that several large household goods carriers have extensive training programs and provide financing of truck tractors for the first time entrants. However, once these owner-operators gain experience they move to other sectors of the trucking industry and are replaced by newcomers. Thus, owner-operators used by the household goods carriers are less experienced than those in the other sectors.

Distributions of owner-operators by year of entry used by the household goods carriers and by other motor carriers were available to test the above hypothesis. To be consistent with it the two distributions, shown in Table 3-1, should be different with more recent entrants predominating among owner-operators used by household goods carriers.^{6/} However, this is not the case. There is clearly no difference between the two sets of owner-operators.

Another explanation attributes inferior quality of services to unwillingness or inability of the HHG carriers to exercise control over actions of their agents and owner-operators.^{7/} This, of course, is not a complete explanation since it is still necessary to explain why carriers would behave in this

TABLE 3-1

Relative Distribution of Owner-Operators by Year
of Survey, Type of Carrier, and Year of Entry

<u>Year of Entry</u>	<u>Year of Survey</u>					
	<u>1979</u>		<u>1980</u>		<u>1981 1/</u>	
	<u>HHG*</u>	<u>Others</u>	<u>HHG*</u>	<u>Others</u>	<u>HHG*</u>	<u>Others</u>
1981	--	--	--	--	6.5	7.8
1980	--	--	7.5	8.4	9.9	11.2
1979	14.2	11.2	19.4	19.1	15.4	12.5
1978	18.0	22.3	14.3	16.1	6.8	10.8
1977	17.3	14.6	8.5	9.6	7.9	6.9
1976	9.3	8.5	6.8	7.0	5.8	6.6
1975	8.4	6.0	5.5	6.3	4.5	4.9
1974	7.1	6.9	5.2	4.4	3.8	4.1
1973	3.9	4.4	3.2	3.4	4.8	4.2
1972	2.5	3.5	3.2	3.4	2.1	2.9
1971	2.0	2.5	2.0	1.8	4.8	4.7
1970	1.1	1.4	4.0	3.9	3.4	2.9
1961-1969	11.2	12.0	15.2	10.0	15.1	13.3
1960 and earlier	5.0	6.7	5.2	6.6	9.2	7.2

1/ Preliminary estimates

*Household Goods Carriers

Source: NMTDB

particular manner since, after all, they are responsible for all actions of their agents and owner-operators. However, there may be some market structure or institutional constraints which prevent carriers from exercising the control.

On this issue the ICC offers the following statement:

"As previously mentioned, our staff has suggested that the carriers unsatisfactory compliance record stems from the fact that the major household goods carriers rely almost entirely on agents and owner-operators to provide the service attributed to the carriers. Commission staff reports that the relationships between the carriers and their agents and owner-operators, and the almost complete dependence by the carriers on the agents and owner-operators for service performance, are such that carriers are unwilling to direct or control the actions and operations of the agents and owner-operators. Further, agents and owner-operators can terminate their agreements with one carrier and affiliate with another carrier almost overnight with little or no expense or financial risk. As a result their willingness to operate within the guidelines and directives of a carrier is tempered greatly by the profit available from each transaction. Finally, many agents and owner-operators recognize at most only limited responsibility or loyalty to a carrier they serve and as a result they frequently fail to honor service commitments made by the carriers.8/

However, there may be some market structure or institutional constraints which prevent carriers from exercising the control.

The mere competition among carriers for services of agents and owner-operators implied in the statement is not sufficient to explain the alleged lack of carrier control. However, the statement also asserts a conflict of interests, i.e., exercise of control over agents and owner-operators is consistent with the carrier's profit maximizing objective but submission to this control is not consistent with agent's or owner-operators profit maximizing objective.

There is no obvious reason why this should be the case. At this time, therefore, we are rejecting the explanation that carriers fail to exercise control for market structure related reasons. However, we intend to pursue

this line of reasoning by investigating possible conditions under which conflicts between carrier's and agent's objectives may develop.

One institutional factor, however, may explain the reluctance of carriers to exercise control over agents and owner-operators. This factor pertains to unresolved issue as to whether agents and owner-operators are employees or independent contractors. The National Labor Relations Board has the jurisdiction over these decisions. The NLRB has not developed objective criteria for the resolution of this issue. Instead, its decisions were based on individual cases. At times they appear to be inconsistent and have seldom been unanimous.^{9/}

Although the NLRB supposedly takes into account a number of factors in its decisions, the degree of control exercised by the carriers appears to be the crucial variable. It is possible, therefore, that carriers are unwilling to exercise sufficient control over their agents and owner-operators for the fear that they would be ruled employees rather than independent contractors.

We find this explanation plausible but further work is needed to verify its validity.

FOOTNOTES

- 1/ Similar conclusions have been reached by the ICC staff. See statement of A. D. O'Neal, U.S. Congress, Senate (1979), p. 15, p. 28 and p. 32.
- 2/ Morash (1981), p. 550.
- 3/ It is also inconsistent with findings of Maister (1980) that carrier executives prefer owner-operators because they take better care of their loads, are more productive, cost less, etc.
- 4/ Statement of A. D. O'Neal, U.S. Congress, Senate (1979), p. 9.
- 5/ Maister (1980), p. 82-83.
- 6/ These data were supplied by the National Motor Transport Data Base originally developed by the Association of American Railroads but now managed by Charles River Associates. It consists of information collected from a survey of truck drivers at 20 truck stops located around the U.S. The sample each year totals about 16,000 to 17,000 drivers.
- 7/ For example, U.S. Congress, Senate (1979), p. 28.
- 8/ U. S. Congress, Senate (1979), p. 28.
- 9/ For further discussion see Maister (1980), Ch. 8.

4. Consumer Ignorance as a Cause of Poor Quality Services

Infrequency of purchases, lack of information and the fact that carriers have to deal directly with the consumer has been cited as the somewhat unique features of the household goods carrier industry. These characteristics provide another possible explanation which may be stated as follows: Household goods carriers are producing a low quality service because low cost objective information about their services are not available and the infrequency of purchases provides no incentive to become informed. Lack of informed consumers gives sellers no incentive to improve the quality of service.

The relationship between information and quality of service is summarized in the following quotation:

"...if consumers cannot accurately ascertain the relative costs and benefits of marketplace offerings, they will not be able to effectively signal their actual preferences to producers. And since producers respond to marketplace choices, rather than those choices that would be made if information were perfect, the set of commodities produced in the absence of information will not reflect consumers' true preferences." (FTC, 1979).

Thus, we have a "market failure," i.e., the market provides an incorrect signal. The market failure alone, however, would not necessarily lead to quality of services lower than that desired by consumers. But Beales, et. al. (1981) argue that

"...the marketplace responds by channeling competition toward more easily observable product attributes and signals of unobservable product characteristics. By generalizing the concept of the "lemons" equilibrium we can show that if price is more easily observed than quality, competition may be skewed toward less expensive, lower-quality products..."

Although this argument provides a link between poor information and lower quality products it requires price competition in the household carrier industry eliminated by regulation. Thus, one is back to the question as to

why regulation in this industry did not cause a shift from price to product competition already discussed in Section 2.

It also seems that in most discussions "information" pertains to some undefined set of objective information collected and disseminated by some official source and other types of information are ignored. While indeed because of infrequency of purchases, consumers may not be willing to invest much in gathering information even a casual conversation with those who have moved recently is sufficient to convince one that in majority of cases the choice of carrier was strongly influenced by own past experience or past experiences of others. These experiences are even more important because of lack of other information and may compensate for nonrepetitive purchase of the service. The carriers, therefore, should have an incentive to produce the quality of services desired by consumers.

In spite of these objectives, the ICC was presumably convinced that lack of information was a major problem and ordered as an "information remedy" the carriers to collect performance data and to submit it to each prospective customer. The required performance data for 1980 for the 13 largest household carriers is shown in Table 4-1.

It is difficult to see how this information could improve the quality of service. To demonstrate why let's take a specific example. Suppose that the consumer will incur the cost of \$100 per day for lodging and incremental food costs if shipment is delayed. The ICC data provides percentage of shipments delayed by 1 to 5 days. Let's assume that if shipment is delayed, the delay will be 2.5 days. Thus, the cost of delay is \$250, and the consumer wants to minimize this cost. Suppose that this consumer has access to the ICC data from which he picks the carrier with the best performance record with respect to delay of shipments. This carrier is Aero Mayflower Transit Co. and the

TABLE 4-1

PERFORMANCE DATA - 1980
13 NATIONWIDE MOVERS DELIVERING 1,000
OR MORE SHIPMENTS FOR COLLECT ON DELIVERY SHIPPERS

PREPARED BY THE INTERSTATE COMMERCE COMMISSION	SHIPMENTS		ESTIMATES		ON-TIME PERFORMANCE				HANDLING OF LOSS — DAMAGE — INCONVENIENCE CLAIMS					
	SHIPMENTS MOVED FOR INDIVIDUAL HOUSEHOLDERS WHO PAID CHARGES AT DELIVERY (COP)	SHIPMENTS MOVED ON WHICH ESTIMATES WERE PREPARED	PERCENT OF ESTIMATES WHICH WERE OVER OR MORE	PERCENT OF ESTIMATES WHICH WERE UNDER OR MORE	PERCENT OF SHIPMENTS PICKED UP MORE THAN 5 DAYS LATER THAN SPECIFIED IN ORDER FOR SERVICE	PERCENT OF SHIPMENTS PICKED UP 1 TO 5 DAYS LATER THAN SPECIFIED IN ORDER FOR SERVICE	PERCENT OF SHIPMENTS DELIVERED MORE THAN 5 DAYS LATER THAN SPECIFIED IN ORDER FOR SERVICE	PERCENT OF SHIPMENTS DELIVERED 1 TO 5 DAYS LATER THAN SPECIFIED IN ORDER FOR SERVICE	PERCENT OF SHIPMENTS ON WHICH A \$50 OR GREATER CLAIM FOR LOSS OR DAMAGE WAS FILED	PERCENT OF SHIPMENTS ON WHICH A CLAIM WAS FILED FOR EXPENSES RESULTING FROM DELAY BY MOVER	AVERAGE NUMBER OF DAYS REQUIRED TO SETTLE LOSS AND DAMAGE CLAIMS	PERCENT OF CLAIMS SETTLED WITHIN 30 DAYS AFTER FILING	PERCENT OF CLAIMS SETTLED BETWEEN 31 AND 60 DAYS AFTER FILING	PERCENT OF CLAIMS SETTLED MORE THAN 60 DAYS AFTER FILING
AVERAGE - 13 MOVERS LISTED	27,948	14,979	26.4	25.1	.60	1.71	2.23	3.51	18.7	.7	24	75	13	12
Aero MyFloer Transit Co., Inc.	62,721	27,863	31.8	27.8	.9	1.4	1.6	2.0	20.4	.6	25	77.0	7.0	16.0
Allied Van Lines, Inc.	88,681	46,576	27.3	26.4	.5	1.4	1.4	2.5	18.6	.8	22	79.2	10.6	10.2
American Red Ball Transit Co.	7,644	4,299	26.5	25.8	.9	1.9	6.2	6.1	24.7	1.9	39	52.2	24.4	23.4
Atlas Van Lines, Inc.	21,797	12,654	29.5	30.1	.9	1.4	3.2	6.9	21.1	.9	23	68.6	12.9	18.5
Bekins Van Lines, Co.	44,052	20,597	29.9	29.9	.8	3.0	2.2	3.7	18.3	1.1	24	74.0	14.5	11.5
Burham Van Service, Inc.	2,509	1,188	24.2	31.7	1.2	2.6	5.2	6.2	16.9	.7	10	94.4	3.3	2.3
Fernstrom Storage & Van Co.	1,480	965	12.2	15.9	1.7	7.2	8.1	8.8	6.8	.4	23	68.0	25.0	7.0
Global Van Lines, Inc.	10,304	6,472	23.3	16.7	.2	2.3	3.2	2.5	17.5	.6	26	64.7	26.9	8.4
Lyon Moving & Storage, Inc.	5,865	2,440	25.5	32.5	.3	.2	5.7	5.4	26.5	1.4	14	90.4	8.2	1.4
National Van Lines, Inc.	4,317	1,857	23.7	33.5	1.8	3.4	6.9	4.7	22.5	1.0	43	43.3	23.9	32.8
North American Van Lines, Inc.	60,115	39,327	20.9	18.3	.4	1.5	1.5	2.7	21.1	.3	18	78.2	15.7	6.1
United Van Lines, Inc.	43,857	24,835	23.5	24.4	.2	1.7	3.0	6.2	12.7	.6	25	74.3	12.4	13.3
Wheaton Van Lines, Inc.	9,927	5,816	31.3	25.5	.6	1.0	2.7	2.7	13.1	1.1	22	72.6	16.6	10.8

probability that a shipment will be delivered 1 to 5 days late is 0.02.

But suppose that consumer did not have this information. He would pick the carrier at random and the probability that event "delay" occurs is equal to the mean for the sample, i.e., 0.0351. Thus, the availability of this information allowed the consumer to reduce the probability of the event "delay" by 0.0121. Now, if this consumer is risk-neutral the expected loss reduction is equal to $(0.0121)(\$250) = \3.025 . That is, the maximum that this consumer would be willing to pay to avoid this loss is \$3.025!

What would be the worst case? Suppose he picked the carrier with the worst performance record. The carrier would be Fernstrom Storage & Van Co. and the expected loss would be $(0.088)(\$250) = \22 . This represents the worst case but only if the consumer is interested in avoiding delay only. Suppose that it is worth \$50 to the consumer to avoid the hassle of filing the claim in case his goods are damaged. Now, the difference between the carrier with the best performance record (also Fernstrom) and the mean for the sample is 0.119. Again, if he is risk-neutral the expected value of loss is $(0.119)(\$50) = \5.95 .

Suppose that consumer wants to minimize the expected loss due to occurrence of both events. In this case, the choice of best carrier (Aero Mayflower) would result in the expected loss of \$15.20 and the choice of worst carrier (Fernstrom) in the expected loss of \$25.40, a difference of \$10.20.

Varying assumptions about costs is not likely to make much difference because one is dealing with "rare" events. Furthermore, since an average interstate move costs the consumer \$858 the value of the information is rather negligible.^{1/} Also, in making the calculations it was implicitly assumed that carrier's past performance record is a valid predictor of its

future performance which is not at all obvious. In short, it is doubtful that consumers' ignorance could be blamed for the unsatisfactory quality of services and the information remedies provided are not likely to be effective in improving the services supplied by the industry.

FOOTNOTE

1/ Statement of Senator H. H. Schmitt, U.S. Congress, Senate (1970), p. 65.

5. Regulation as a Cause of Consumer Complaints

The number of consumer complaints received by the ICC has been cited as the evidence to support the claim of inferior quality of services provided by the HHG carriers. It is possible, however, that regulation itself was responsible for a large proportion of these complaints.

It has been argued above that regulation leads to uniformity in price-quality offerings. Thus, consumer who is willing to pay higher rates for better quality service is precluded from doing so. For example, the HHG carriers were prohibited from providing consumers with binding cost estimates, guaranteeing timely pickup or delivery or offering lower rates for decreased liability.

While it may seem strange to find these provisions in the legislation the ostensible objective of which was to protect consumers this is a clear case where consumer benefits were sacrificed in order to make regulation enforceable. That is, enforcement of regulation required promulgation of rules inimical to consumer welfare. For example, if HHG carriers were allowed to make binding estimates the enforcement of price regulation would have been difficult if at all possible since carriers could deliberately underestimate weight of the shipment as a part of competitive strategy.

The prohibition of binding estimates, however, created a score of other problems. Instances were reported in the hearings of consumers being surprised by very large differences between estimated and actual costs of the move. Since payment is due on delivery of shipments, this undoubtedly has created serious problems and was a source of numerous complaints. It also spawned the practice of "low balling" and "weight bumping." "Low balling" pertains to deliberate underestimation of moving costs by the carriers in order to obtain business. "Weight bumping" pertains to the falsification of

shipment weight in order to increase the transportation charges. Both practices are alleged to be widespread although no conclusive evidence are available.

The prohibition against guaranteeing pickup and delivery dates was probably motivated by ICC's desire to preclude non-price competition. Regulation merely required pickup and delivery of shipment "with reasonable dispatch" but "the promised day of pickup" and "the promised day of delivery" were retained in the shipping documents. This may have created a false perception in the consumer's mind that he had a binding contract with the carrier to pick up and to deliver the shipment on the specified dates. The failure to do so was undoubtedly another source of numerous complaints.

The complaints pertaining to loss and damage claims were probably unrelated to regulation. The primary source of complaints here is the disagreements over value of household goods.

According to the ICC estimates in 1978, 20 to 25 percent of shipper complaints were related to estimates, overcharges and weighing and another one-third pertained to loss and damage claims. But the single most frequent complaint was the failure of carrier to pick up or deliver shipments as agreed. Thus, easily more than one-half of complaints were related to regulation.

6. Conclusions and Implications

In this paper, we have examined a number of explanations for the alleged inferior quality of services provided by HHG carriers. Our conclusions, however, are seldom sufficiently definitive. Unfortunately, there are also significant differences in implications regarding the probable effect of the HGTA and other proposed remedies depending on which explanation(s) is really true. Thus, for example, if the rate level permitted by the ICC during the pre-HGTA period was indeed below the competitive equilibrium level, one should expect rates in the HHG sector to increase and the quality of services to improve. The empirical test of this proposition, however, will be difficult because of the economy-wide recession, the inception of which coincided with passage of the HGTA.

We have rejected the notion that there is a direct relationship between the extent to which agents and owner-operators are being used and the quality of service. In fact, we argue that with a very large seasonal variation in demand for their services, the agency system type of operation is most efficient. Thus, any policy requiring HHG carrier to replace agents and owner-operators with their own assets and employees will increase costs and, therefore, costs of services to consumers.

We have also rejected the argument that HHG carriers use inferior agents or owner-operators. But retain the idea that HHG carriers may not be able to exert necessary control over agents and owner-operators for the fear that they will be declared employees and not independent contractors by the NLRB. If that is indeed the case, the replacement of agents and owner-operators with employees and carrier owned equipment would improve service but only at increased costs to consumers since the most efficient form of organization has to be sacrificed. A better alternative is the legislative action declaring

agents and owner-operators to be independent contractors. This action would retain the benefits of the most efficient organization and would improve services at no increase in costs to consumers.

We have further rejected the idea that inferior services are attributable to lack of information or consumer ignorance. Here we venture to predict that the information remedy prescribed by the ICC is not going to be effective or indeed be used by consumers.

Finally, if the regulation itself was the source of a large share of complaints, as we argued, the HGTA by allowing binding estimates, pick up and delivery guarantees and other price-quality options should reduce the number of complaints and, thus, by definition, improve the quality of services.

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AIRLINE DEREGULATION:
WHAT'S BEHIND THE RECENT LOSSES?

by

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AIRLINE DEREGULATION: WHAT'S BEHIND THE RECENT LOSSES?

The airlines were the first heavily regulated industry to be freed from government controls over prices, entry and exit, and their recent performance has been regarded by many as a test of government regulatory policies. In its first years, from early 1977 through the middle of 1979, airline deregulation appeared to be an unqualified success: airfares declined significantly, air travel grew substantially, and airline earnings reached record levels. Beginning in the middle of 1979, however, both airline passenger traffic and earnings fell precipitously. In 1981 the industry posted unprecedented financial losses, while in 1982, for the first time in the history of the industry a major carrier (Braniff) declared bankruptcy. At the same time, several other airlines faced financial difficulties that threatened their continued operation.

The early financial strength of the airlines was hailed by some as evidence that an industry can prosper in an unregulated environment, encouraging Congress and the regulatory agencies to relax price, entry, and exit controls in the trucking, intercity bus, railroad, banking, and telecommunications industries. Hence it is not surprising that some analysts now interpret the recent financial problems of the airlines as evidence that unregulated competition may be destructive or unworkable in some of these industries.

Our analysis suggests, however, that the recent fluctuations in airline earnings are due largely to the onset of the current recession and the 1979-80 fuel price increases, rather than to the effects of deregulation. While some air carriers may have been hurt financially by deregulation, the pattern of losses is more consistent with short-term adjustments that certain firms must make to survive in a more competitive environment than with persistent long-term financial instability in the industry. For the industry as a whole, there is some evidence that deregulation may have helped rather than hurt earnings by allowing carriers more flexibility in responding to downturns in the economy, sudden fuel price increases, and other changes in their environment.

ALTERNATIVE EXPLANATIONS

Destructive Competition

Some opponents of deregulation have long argued that unrestrained competition is unworkable or destructive in certain industries, particularly those in which a high proportion of costs are fixed in the short-run.¹ In such a situation, managers will always be tempted to attract any traffic which will cover at least its variable costs. Unrestrained competition will force managers to price all their services close to variable costs, however, and in the presence of high fixed costs, all firms will lose money. Although customers may benefit in the short-run from lower prices, they may suffer in the long run if the industry's chronic unprofitability makes it difficult

-3-

to attract capital and offer reliable and safe service, or if fierce competition eliminates all but a few firms who are then able to maintain high prices and keep new entrants out.

According to this view, the recent airline losses are the product of such destructive competition. Only a small share of airline costs are variable in the short run, some contend, since fixed aircraft leases constitute a high percentage of carrier expenses and the added costs of carrying extra passengers on scheduled flights with many empty seats are nominal. The extremely low fares that have prevailed in some markets and the recurring fare wars are, in this view, evidence of a destructive form of competition that will harm both the airlines and air travelers in the long run.²

Transitional Losses and the Economic Environment

Many proponents of deregulation doubt that it has touched off destructive competition among the airlines. Because plane leases can be sold to other airlines, for example, and aircraft and crew can be redeployed to other routes as travel patterns warrant, they contend that few costs are truly fixed for long. To the extent costs are fixed, it is only in the extremely short run and few managers are so myopic as not to recognize the perils of pricing based on such very short-run costs.

Instead, proponents of deregulation blame current airline losses on a combination of changes in the economic environment and certain foreseeable consequences of the industry's adaptation to a less

-4-

regulated state.³ They contend that the unprecedented combination of sharp increases in petroleum prices following the Iranian revolution of 1979 and continuing recession in the economy would certainly have caused serious financial difficulties within the industry even under continued regulation. Further, some losses and perhaps expected during the transition to a more competitive state, because historical controls on airline fares and routes encouraged the industry to invest in excessive long-haul aircraft capacity, while protecting inefficient carriers. Once the economy recovers and the industry makes the necessary adaptations to a competitive environment, their argument goes, most the airlines will again be profitable.

None of these alternative interpretations of the industry's current losses can be rejected on a priori grounds. To evaluate their plausibility, our analysis estimates the separate effects on total airline industry profitability of the recent fuel price increases, recession, and carriers' exercise of the freedom granted them by deregulation. In addition, it examines the pattern of losses within the industry to see whether they are consistent with long term financial instability or short term adjustments to new competitive forces.

Although government controls over fares, entry and other forms of competition were relaxed over a period of several years, we consider airline deregulation to have begun in early 1977, when the CAB relaxed restrictions on charter carriers and approved the first "super saver" fares. Shortly thereafter, the CAB also adopted substantially more

-5-

permissive policies toward route awards. The Airline Deregulation Act, passed in October 1978, confirmed and expanded this new flexibility, while providing a timetable for the expiration of CAB authority to regulate fares and routes.⁴

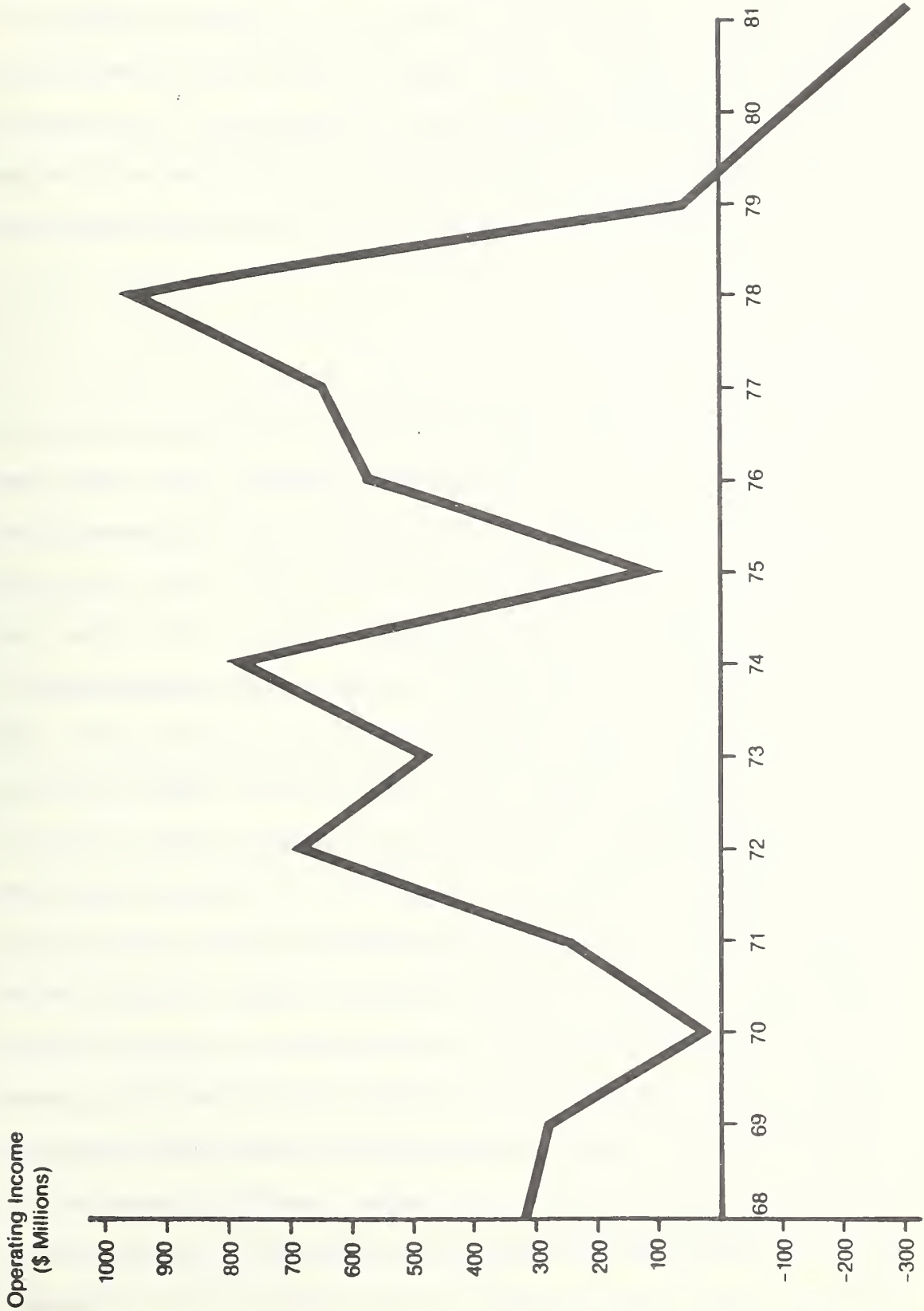
THE ECONOMIC ENVIRONMENT AND EARNINGS

The airline industry's earnings record was erratic even before deregulation, as shown in the graph of airline net operating income in Figure 1. However, the decline in earnings following deregulation (from their 1978 peak through 1981) has been considerably more severe than past downturns. To estimate how much of the airline industry's recent losses can be explained by the recession and rapidly rising fuel prices, we developed a simple statistical model of the demand for air travel. The model, calibrated to quarterly data from 1970 through 1981, relates variations in the total number of revenue passenger miles (RPMs) carried by major airlines to the level of airline fares, growth in aggregate real disposable personal income, and an index of the price of intercity travel by competing modes. The model also accounts for the effects of flight restrictions imposed by the Federal Aviation Administration following its dismissal of the air traffic controllers during 1981.⁵

Because air carriers used the new fare-setting freedom permitted them to offer widespread discount fares targeted to price-sensitive travelers, we expected that the aggregate sensitivity of air travel to

-6-

Figure 1. Airline Industry Net Operating Income, 1968-81^a



^a Equal to operating revenue less operating expense; domestic operations of CAB-Certificated air carriers.

Source: "Air Carrier Financial Statistics," U.S. Civil Aeronautics Board, various years.

-7-

variations in the average fare paid would increase following deregulation. To reflect this possibility, the model was designed to allow separate estimates of the response of air travel to average fare changes in the periods before and after deregulation. The results of the model confirm that reductions in the average fare paid brought about substantially greater increases in air travel after deregulation than before.⁶

The Recession

To estimate how the industry might have fared in the absence of the current recession, we predicted what passenger traffic would have been if real disposable personal income had risen at approximately its historic trend of 2.5 percent per year beyond 1978, rather than at the less than one percent annual rate actually observed. This higher rate of income growth would have produced traffic volumes about 6 percent above their actual levels in 1980 and 9 percent higher by 1981. With airfares remaining at their actual levels, these higher RPM levels would have been directly translated into comparable revenue increases. The increase in operating costs entailed in carrying these larger passenger volumes was estimated by assuming that air carriers would add between 1.1 and 1.5 available seat miles (ASMs) of extra capacity for every additional RPM carried. An increase of 1.1 ASMs flown per additional RPM carried is consistent with airline industry's average response to rising traffic levels from 1971 through 1979, a period of uninterrupted growth in RPMs. Although capacity increases of 1.5 ASM's per RPM are not unknown, they are atypical, and are used to provide a lower bound estimate for the effect of the additional traffic on operating income.⁷

-8-

Table 1 summarizes the implications of this no-recession scenario for the industry's aggregate volume of air passenger traffic, load factor (the fraction of available seats that are occupied by paying passengers), and net operating income during 1980 and 1981. While these estimates suggest that load factors would not have remained at the extremely high levels (over 60 percent) attained during 1979, they do suggest some improvement over those actually observed, and revenues would have increased commensurately with these higher traffic levels. After adjusting for the additional operating expense entailed in carrying these higher passenger volumes, this analysis suggests that industry-wide net operating income might have been improved by \$120-470 million in 1980 and \$170-700 million in 1981, as the table indicates.

A comparison of these estimates with Figure 1 shows that in the absence of recession, 1980 and 1981 could have been as profitable for the airline industry as most years in its recent history. Although 1979 earnings would probably still have shown the disastrous effects of the sudden increase in fuel prices, the period corresponding to deregulation might have been strikingly reminiscent of the period from 1970-74. During that time, a strong earnings recovery was temporarily interrupted by the fuel price increase of 1973, but resumed as the industry quickly adapted to the higher cost structure. Of course, the 1979 earnings drop would still have been more severe than that in 1973, reflecting the much larger real increase in fuel prices precipitated by the 1979 Iranian crisis than that following the 1973 oil embargo.

-9-

Table 1. Air Travel, Load Factor, and Airline Industry Net Operating Income: Actual and Estimated without Recession

Item	1980		1981	
	Actual ^a	without Recession ^b	Actual ^a	without Recession ^b
Air Travel (billions of passenger miles)	192.4	204.2	184.6	201.8
Carrier Load Factor (passenger miles as a percent of seat miles flown)	58.0%	58.4-59.2%	57.4%	58.1-59.3%
Net Operating Income ^c	\$ -70	\$ 120-470	\$ -288	\$ 170-700

^aDomestic operations of CAB-Certificated air carriers; see U. S. Civil Aeronautics Board, "Air Carrier Traffic Statistics," 1980 and 1981; and "Air Carrier Financial Statistics," 1980 and 1981.

^bEstimates by the authors assuming a 2.5% per year growth in inflation-adjusted personal disposable income.

^cOperating revenue less operating expense.

-10-

Rising Fuel Prices

The average price paid by domestic air carriers for jet fuel rose from less than 40 cents per gallon in 1978 to over \$1.25 by the end of 1981.⁸ Although some of this dramatic increase was absorbed through substitution of other inputs to reduce fuel consumption (for example, by flying at slower speeds or using more maintenance labor), most of it translated directly into sharply higher expenses for providing air service. To investigate what would have happened in the absence of fuel price increases, air travel was estimated assuming that jet fuel and gasoline prices would have escalated only as fast as prices for non-energy commodities during the period 1979-81. Under this assumption, fuel prices would have risen to only about half of their actual level by the end of 1981, so that both air fares and the cost of intercity travel by competing modes would be significantly lower.⁹ Because the increase in air carriers' yields over this period almost exactly matched that of expenses per seat-mile, it was assumed that fares in each of the years 1979-1981 would have been lower by the full reduction in fuel cost per seat-mile. Finally, air carriers' total operating expenditures were again assumed to increase in proportion to the amount of service added to accomodate the resulting increase in passenger traffic.¹⁰

Several consequences of these hypothetical circumstances are displayed in Table 2. Fuel expenses per seat-mile flown would have been reduced by approximately 40 percent in 1980 and 1981, although the savings in total operating expenses would not have been as large because of the added cost of carrying the higher predicted traffic

Table 2. Fuel Expense and Airline Industry Net Operating Income:
Actual and Estimated Without Fuel Price Increases

Item	1979		1980		1981	
	Actual ^a	without Fuel Price Increase ^b	Actual ^a	without Fuel Price Increase ^b	Actual ^a	without Fuel Price Increase ^b
Fuel Cost (¢/gallon)	57.4	44.3	86.6	51.0	102.1	55.7
Fuel Expense per Seat Mile Flown (¢)	1.6	1.2	2.3	1.4	2.4	1.4
Net Operating Income (\$ millions) ^c	\$ 60	\$ 570-750	\$ -70	230-730	\$ -288	\$ 150-660

^aDomestic operations of CAB-certificated air carriers; see U.S.Civil Aeronautics Board, "Monthly Report on Fuel Prices, Consumption and Expenditures," various issues; "Air Carrier Traffic Statistics," 1979, 1980, and 1981; "Air Carrier Financial Statistics," 1979, 1980, and 1981.

^bAuthors' estimates assuming fuel prices increase at same rate as Producers' Price Index for nonfuel commodities from 1979-81.

^cEqual to operating revenue less operating expense.

-12-

volumes. Air travel would have increased in response to the lower fares permitted by these hypothetical fuel cost savings, although this effect would have been partly offset by the lower cost of traveling by other modes. Even with increased air travel, these reduced fares would have produced somewhat lower total operating revenue, particularly in 1981 as a sluggish economy increasingly affected passenger volumes. After adjusting for the added expense of carrying the higher estimated traffic levels, industry-wide operating income would have improved by about as much as estimated in the no-recession case: \$230-730 million in 1980, and \$150-660 million in 1981.

Although these estimates incorporate a number of critical assumptions, they suggest that fuel price increases have probably been almost as financially damaging to airlines as the recession in economic growth. While rapid fuel price escalation beginning in 1979 seriously undermined industry earnings through 1980 and probably much of 1981, the continuing recession now appears to be the industry's most serious external problem. Perhaps more important, these analyses suggest that recent operating losses in the domestic airline industry can be explained largely by a succession of economic developments outside the industry itself, rather than by the unleashing since deregulation of competitive forces that will ultimately prove financially ruinous for important segments of the industry.

-13-

DEREGULATION AND EARNINGS

Although economic developments outside the industry are probably largely to blame, deregulation almost surely contributed somewhat to certain airlines' financial problems. Even proponents of deregulation expected that it would cause some losses, although most expected only transitional losses during the adjustment to a competitive environment. In the following discussion, we examine the effects of deregulation itself on air carriers' recent financial performance.

The Pattern of Losses Within the Industry

The pattern of losses within the airline industry provides some clues as to whether and how deregulation has contributed to losses. In particular, if opponents of deregulation are correct, one would expect that losses would be widespread in the industry since destructive competition would be likely to break out in many markets. However, if proponents of deregulation are correct, then one would expect losses to be concentrated in particular segments of the industry which faced the most severe problems from the sudden transition to unregulated competition.

The most striking characteristic of recent airline losses is that they tend to be concentrated among airlines serving long-distance routes and using high capacity, wide-bodied jet aircraft, as shown in Table 3. This pattern of losses may be partly due to the recession, since long-distance air travel includes more vacation and fewer business travellers than is typical on short flights, and thus may be

Table 3. Recent Variation in Air Travel and Net Operating Income
within the U.S. Domestic Airline Industry

<u>Year</u>	<u>Major Short-Haul Air Carriers^a</u>	<u>Major Long-Haul Air Carriers^b</u>
	<u>Passenger Miles (billions)</u>	<u>Passenger Miles (billions)</u>
	<u>Net Operating Income^c (\$ millions)</u>	<u>Net Operating Income^c (\$ millions)</u>
1975	41.7	87.7
1976	45.9	98.2
1977	50.0	105.3
1978	61.2	117.3
1979	67.7	125.0
1980	69.9	115.1
1981	61.2	107.0

^a Includes Delta, Eastern, USAir, Frontier, Ozark, Piedmont, Republic, Texas International.

^b Includes American, Continental, National, Northwest, PanAm, TWA, United, Western.

^c Equal to operating revenue less operating expense.

-15-

more severely affected by a weakening economy. However, the figures in Table 3 suggest that the recession does not fully account for the pattern. Although passenger traffic eventually declined more among long-haul than short-haul carriers, the long-haul carriers first experienced large financial losses in 1979, while the traffic volume they carried continued to increase. Moreover, this pattern of losses occurred despite the fact that fuel price inflation raised the costs per seat-mile of service supplied much less for long-haul than for short-haul carriers.

The concentration of losses among the long-distance carriers is at least partly explained by the rapid transition from a closely regulated environment to an intensely competitive one. In particular, the historical fare-setting policies of the CAB apparently allowed higher "markups" over costs on long-distance flights than on shorter ones, thereby stimulating intense competition for market shares among the airlines authorized to fly on long-distance routes.¹¹ Because the CAB required that all carriers on a single route charge the same fare, long-haul carriers attempted to attract passengers by offering higher levels of service than their competitors, including more frequent departures and new wide-body aircraft. The resulting service competition increased the number of long-distance flights beyond what would have occurred in the absence of competitive pricing, thereby encouraging airlines to overinvest in the high capacity wide-body jets developed in the early 1970's, which were specifically designed to operate most economically over longer, heavily travelled routes.

-16-

After the CAB began to allow airlines more freedom to set fares and serve new cities, intensive fare competition began on major long distance routes, involving not only airlines historically authorized to serve them but also new entrants seeking to profitably redeploy large fleets of wide-body aircraft. In conjunction with rapidly rising costs for fuel, labor, and other inputs, the resulting downward pressure on fares dramatically narrowed--and apparently reversed--the historical gap between fares charged on these routes and the costs of carrying passengers on them.

Insofar as the CAB's historical fare setting practices are to blame, losses on long haul passenger traffic should persist only as long as is required for the current excess of wide-body aircraft capacity to be absorbed by rising traffic volumes in domestic transcontinental and long-distance international markets, or eliminated through retirement of fully depreciated aircraft. Because passenger volumes are also currently depressed in international markets, this excess capacity seems likely to be absorbed only after business activity and personal incomes resume growing in the U.S. and other developed economies. Although this could be a lengthy period, the pattern and timing of these losses is at least consistent with the hypothesis that they are largely the result of the industry's transition to an unregulated status, rather than evidence of ultimately destructive competition.

Still other distortions caused by past regulatory practices may now be contributing to transitional losses in the industry, or may do

-18-

deregulation have argued, that carriers' unbridled exercise of their new fare freedoms is contributing to financial losses. Figure 2, which compares the average fare actually paid per mile of air travel with a standard coach fare calculated according to the CAB's fare-setting formulas, clearly shows that in the early stages of deregulation airlines used their fare freedoms to lower fares relative to both expenses and the fare levels that would have prevailed under continued CAB regulation. (Because the coach fares authorized by the CAB were adjusted throughout this period to reflect rising expenses for providing air service, the average coach fare shown in the figure can also be viewed as a reasonable index of the trend in air carrier's costs.) As the figure shows, there was almost no change in the differential between the standard coach fare and actual yield from 1974 to 1977, although the yield remained slightly below the full coach fare because some fare discounts were permitted. Most of the growth in this gap occurred in 1978 and 1979, when actual yield fell substantially in relation to the full coach fare. This occurred as airlines began to offer a broadening range of discounts, while the newly unleashed competition maintained downward pressure on the overall structure of fares on many routes.

The effect of this price competition on air travel and airline earnings can be estimated using assumptions similar to those employed in the earlier analyses of the effects of recession and fuel prices. The reduction in air traffic in the absence of the fare reductions permitted by deregulation was estimated using the model described

-17-

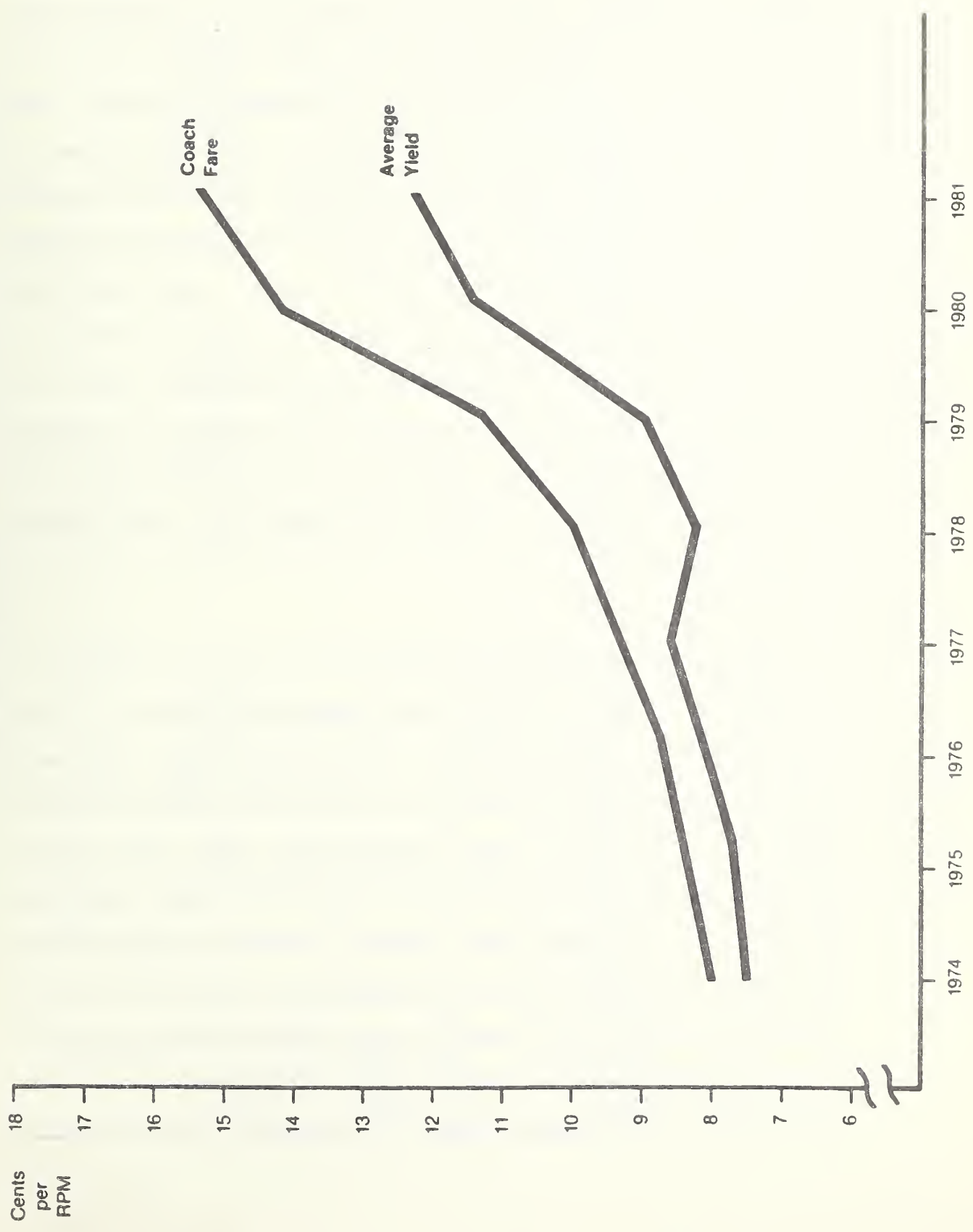
so in the near future. Some economists have long argued, for example, that the CAB's fare-setting and route award procedures tended to protect weak and inefficient carriers and to allow airline labor to win compensation and work rules that are more generous than they would have been in a more competitive market. Many of the former interstate airlines and new scheduled air carriers that have been established since deregulation have average expenses per seat-mile that are as little as two-thirds of those of the "old guard" trunk carriers flying comparable aircraft.¹²

Only part of these economies are due to a lower quality of service offered (for example, no inflight meals or interlining of baggage), and as these low cost carriers expand their operations, the old guard airlines may incur disproportionate losses until they bring their productivity levels and pay practices under careful control. Some competition of this type appears to have contributed to losses in the long-haul markets as well as on selected short-haul routes and may persist for some time. Although it may result in important losses for carriers who fail to respond rapidly to the challenge of low-cost competition, it is unlikely to have chronic destabilizing effects on air service or airline industry finances.

Fare Discounts

While the pattern of losses within the industry appears more consistent with transitional adjustments than widespread destructive competition, intensive fare competition has not been confined solely to long-haul routes. Thus it is still possible, as some opponents of

Figure 2. COACH FARES AND AVERAGE YIELDS, 1974-1981



-20-

earlier, by assuming that under continued regulation average yields would have remained at their historical level of 94 percent of standard coach fares. Further, since selective use of discount fares was historically discouraged by the CAB, under continued regulation airline travel was assumed to continue to respond to average fare changes with the same sensitivity estimated over the period prior to 1978, rather than the higher post-deregulation sensitivity actually observed. As shown in Table 4, had the strict application of past CAB fare-setting policies persisted after 1978, airline travel would have reached only been about 85 percent of the levels actually achieved in 1979 through 1981. The surprisingly large estimated effect of continued regulation on traffic is due to two factors: the higher overall level of fares that would have resulted and, perhaps more important, a continuation of the CAB's restrictive policy toward discount fares.

Table 4 also estimates the effect of these fare freedoms on industry-wide operating income, using assumptions similar to those employed in the earlier analyses. Specifically, under continued regulation air carriers are assumed to have reduced seat miles flown (ASMs) by 1.1 to 1.5 for every passenger mile (RPM) lost because continued restrictions on their use of discount fares. For the moment, it is also assumed that carriers achieved no productivity improvements as a direct result of deregulation (a point to be taken up shortly), so that their expenses per seat mile flown would have been no higher if CAB regulation had continued. If one assumes that air carriers would have reduced ASMs by 1.5 per RPM lost, continued

Table 4. Estimated Effects of Continued Regulation on Traffic,
Revenue, Expense and Operating Income

Item	1979		1980		1981	
	Actual ^a	Continued ^b Regulation	Actual ^a	Continued ^b Regulation	Actual ^a	Continued ^b Regulation
RPM (billions)	202.2	173.6	192.4	163.5	184.6	155.3
Yield (\$/ passenger mile)	.0997	.1026	.1273	.1299	.1465	.1575
Net Operating Income ^c	\$ 60	\$ -640 to -190	\$ -70	\$ -700 to -80	\$ -288	\$ -860 to +160

^aDomestic operations of CAB-Certificated air carriers; see U. S. Civil Aeronautics Board, "Air Carrier Traffic Statistics," 1980 and 1981; and "Air Carrier Financial Statistics," 1980 and 1981.

^bEstimated by the authors using assumptions detailed in text.

^cOperating revenue less operating expense.

-22-

regulation could conceivably have led to smaller losses than were actually observed in 1981. Using the more reasonable assumption that ASMs would have been reduced by 1.1 per lost RPM, however, the airline industry might well have exhibited even poorer financial performance under continuing regulation than it actually did in 1979-81. Hence the flexibility in fare-setting introduced by deregulation appears to have allowed the industry to respond to rapidly rising operating costs and declining demand in ways that have helped it endure the succession of recent adverse economic developments.

Productivity Improvements

Deregulation may have also helped airlines improve earnings slightly by introducing new incentives to increase the productivity with which they utilize capital and operating inputs. Although the industry had an impressive history of productivity improvements even under CAB regulation, much of it was associated with major improvements in aircraft technology, including the jet during the early 1960s and the high capacity, wide-bodied aircraft during the early 1970s. In contrast, much of the productivity gain since deregulation is attributable to improving utilization of existing aircraft fleets, accomplished through a combination of increases in the number of seats per aircraft, the number of hours aircraft are typically flown each day, and the fraction of available seats actually occupied by passengers.

To illustrate the changes in productivity growth since deregulation, Table 5 compares recent trends in prices paid by

-23-

Table 5. Changes in Airline Input Prices, Expenditures,
and Fare Levels Before and After Deregulation

	Before Deregulation <u>1970 - 1977</u>	After Deregulation <u>1977 - 1981</u>
<u>Percentage Change</u>		
Airline input prices ^a	64%	95%
Expenditures per ASM ^b	49%	72%
Expenditures per RPM ^b	52%	66%
<u>Relative Change (Change in Input Prices = 100)</u>		
Airline input prices ^a	100	100
Expenditures per ASM ^b	77	76
Expenditures per RPM ^b	81	69

^a Measured by an index of prices paid by CAB-certificated air carriers for capital, labor, fuel, other materials and supplies, and landing fees, see U.S. Civil Aeronautics Board, Office of Economic Analysis, "Revision and Update of Index of Air Carrier Input Prices," photocopied, July 1982.

^b U. S. Civil Aeronautics Board, "Air Carrier Financial Statistics," and "Air Carrier Traffic Statistics," various years.

-24-

airlines for operating inputs, expenditures per available seat mile (ASM) flown, and expenditures per revenue passenger mile (RPM) carried. In the six years before deregulation, expenditures per ASM increased less rapidly (about three quarters as fast) than the composite input cost index, primarily because of economies associated with the introduction of wide-body jets. The percentage of seats occupied actually declined slightly, however, so that the net increase in expenditures per RPM carried during this period was more than 80 percent of that in input prices. In the three years after deregulation, expenditures per ASM again increased about 75 percent as rapidly as did input prices, although in this case the savings was largely accomplished by flying aircraft more hours per day, increasing seating density, and other productivity improvements, rather than by the introduction of new aircraft types. Moreover, in the post-deregulation years, the percentage of seats typically occupied increased slightly, so that expenditures per RPM increased by only about 70 percent of the corresponding increase in input prices.

The substantial roles of increasing load factors, higher seating density, and increased hours of daily aircraft utilization in raising productivity after deregulation are especially notable, since each comes at the expense of passenger comfort, an important dimension of the quality of air service offered. Higher seating densities and load factors increase passenger crowding, while increased daily aircraft utilization can often be achieved only by adding less conveniently scheduled flights. Although these changes slightly reduced the quality of air service, the increase in load factors suggests that at

-25-

least on average, air travelers found that the resulting savings in airfares more than compensated for the added inconvenience and crowding they experienced.

Of course, it is difficult to tell how much of the improved rate of productivity growth in the last few years should be attributed to deregulation and how much would have occurred in any event. Part of the increase in seating density and load factors probably reflects efforts to reduce fuel consumption in response to skyrocketing prices, a source of productivity growth that clearly cannot be attributed to deregulation. Moreover, even if a substantial portion of this productivity gain was due to deregulation, increased competition would probably soon force the airlines to pass most of it through to air travellers in the form of lower airfares, rather than retaining the cost savings as higher profit levels.

Nevertheless, recall that the estimates presented in Table 4 were based on the assumption that no productivity improvements were attributable to deregulation, an assumption apparently at odds with the results presented above. Any adjustment for productivity improvements induced by deregulation would thus increase the estimates of industry-wide operating losses under continued regulation, since operating expenditures would be larger in their absence and the higher fares thereby necessitated would have further reduced passenger volumes. Still, in comparison to the effect of fare-setting flexibility on air carriers' profitability, any improvement in earnings from productivity improvements prompted by increased competition has probably been relatively minor so far.

-26-

CONCLUSION

The disastrous earnings downturn in the airline industry following the first years of deregulation can be largely attributed to a combination of the current recession and recent fuel price increases. On balance, the impact of the recession appears roughly comparable to that of previous cyclical downturns; in fact, if this was all the industry had had to contend with, it might now be performing reasonably well, if not prospering. While recession may have been the worst of the industry's problems, moreover, it certainly could have been more successfully endured had not airlines at the same time been required to adjust to the dramatic restructuring of operating costs brought about by the 1979-80 runup in fuel prices. Finally, although the evidence is more tentative here, the pricing freedoms offered by deregulation apparently have helped rather than hurt the industry's financial performance. Indeed, without airlines' ability to use discount fares to fill otherwise empty seats, the industry's aggregate financial performance over the post 1978 period might have been much worse, perhaps necessitating drastic CAB action to maintain the financial viability of the industry.

Insofar as deregulation is to blame for industry losses, it is apparently because of the rapid and difficult adjustments that certain segments of the industry have been forced to make in order to adapt to a suddenly more competitive environment, rather than to potentially ruinous competition touched off by deregulation. The concentration of current losses among the long-haul carriers can be traced in part to

-27-

past regulatory practices that encouraged overinvestment in wide-body aircraft capacity, although even under CAB regulation long-haul carriers historically experienced volatile earnings. While even a modest domestic economic recovery should return most short-haul carriers to financial health, a more robust and widespread recovery may be required to absorb the current capacity excess and restore a normal level of profitability to long-haul air service.

FOOTNOTES

1. Perhaps the most eloquent statement of this argument is Melvin A. Brenner, "The Need for Continued Regulation of Air Transportation," Journal of Airl Law and Commerce 41 (1975): 793-813.
2. See, for example, Fredric C. Thayer's letter to the editor in Regulation 6 (November/December 1982), p. 2.
3. See, for example, David R. Graham and Daniel P. Kaplan, "Airline Deregulation Is Working," Regulation 6 (May/June 1982): 26-32.
4. For a description of the initial steps toward deregulation see John R. Meyer and Clinton V. Oster, editors, Airline Deregulation: The Early Experience (Boston: Auburn House, 1981), ch. 1, or David R. Graham and Daniel P. Kaplan, "Developments in the Deregulated Airline Industry," report by the Office of Economic Analysis, Civil Aeronautics Board, photocopied, June 1981, pp. 3-16.
5. The estimated equation was:

$$\text{RPM} = -18.04 + 18.61 \text{ DD} - 1.325 \text{ AR} - 2.246(\text{DD} \times \text{AR})$$

(8.30) (7.04) (0.479) (1.272)

$$+ .2396 \text{ GP} + .05359 \text{ DPI} - 3.855 \text{ PATCO}$$

(.0337) (0.004) (0.835)

R = .992
F = 771
(6,41 d.f.)

where RPM is the seasonally adjusted revenue passenger miles on all domestic flights by certified carriers; DD is a dummy variable for deregulation (1 if first quarter 1978 or later; zero otherwise); AR is the average revenue per passenger mile, in 1972 dollars; GP is the retail price of gasoline per gallon, in 1972 dollars; DPI is disposable personal income in 1972 dollars; and PATCO is a dummy variable for the air traffic restraints imposed in response to the air controller's strike (1 for the third and fourth quarters in 1981, zero otherwise). The standard errors of the estimates are shown in parentheses.

6. The elasticities evaluated at the mean are:

Own price, regulated	-0.53
Own price, deregulated	-0.88
Income	+1.41
Cross-price (gasoline)	+0.22

Separate estimates of the elasticities before and after deregulation were obtained by using the "jackknife" technique

-29-

described in Potluri Rao and Roger LeRoy Miller, Applied Econometrics (Belmont, California: Wadsworth, 1971), pp. 98-99.

7. There are some reasons to believe that the number of ASMs flown will be more sensitive to short-term fluctuations in the number of RPMs in a deregulated airline industry than it has been in a regulated industry. Under the old regulatory policies, the CAB sometimes raised airline fares during recessions to offset traffic losses and thereby may have reduced the need for the airlines to adjust ASMs accordingly. Moreover, price competition among airlines was also limited, so that the airlines might maintain their ASMs during a recession in order to limit traffic losses to other carriers. The actual record of RPM and ASM changes since deregulation does not clearly confirm this hypothesis, although it is too early to be sure. If anything, changes in ASMs seem to be slightly less responsive to changes in RPMs since deregulation.
8. See U.S. Civil Aeronautics Board, "Monthly Report on Fuel Prices, Consumption, and Expenditures," December 1978 and December 1981.
9. It was also assumed that none of the improvement in fuel consumption per ASM that followed the runup in fuel prices would have taken place in its absence. This implies that the actual improvement in airline fuel efficiency after 1978 resulted entirely from efforts to cut fuel consumption rates initiated in response to rising prices, rather than from technological improvements in aircraft or similar developments.
10. As in our earlier calculation, we assume between 1.1 and 1.5 ASMs are added for each additional RPM.
11. The Board purposely continued to set fares below costs on routes less than 400 miles in length and above costs on longer routes even after adopting major reforms in its fare-setting practices in 1974; see Graham and Kaplan, "Developments in the Deregulated Airline Industry," p. 8.
12. Graham and Kaplan, "Developments in the Deregulated Airline Industry," pp. 35-38.

SOME THOUGHTS ON ANTITRUST
AND THE INTERCITY BUS INDUSTRY

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Research Conference on Regulatory Reform
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Between 1980 and 1982, Congress enacted a quartet of statutes designed to reform federal economic regulation of motor carriers of freight, rail carriers of freight, household goods movers and intercity bus companies. These laws followed passage of the landmark Airline Deregulation Act of 1978, which phases out domestic route and rate regulation and abolishes the Civil Aeronautics Board by 1985.

An important thrust of these statutes is to replace federal regulation with marketplace regulation and to place greater reliance on the antitrust laws to police market failures and anti-competitive practices. This policy shift poses a number of questions about how antitrust laws will apply to these industries, which have developed and matured in a regulatory cocoon and have developed practices which might be illegal for other industries.

In some cases, the effects of regulatory reform legislation are clear. For example, under the Motor Carrier Act of 1980, motor carriers will be partially stripped of antitrust immunity under the Reed-Bulwinkle Act, and will be unable to collectively set single-line rates after 1 July 1984. In other areas, however, the impact is less clear.

This uncertainty in the law raises important questions for policy makers, specifically, to what extent is it feasible, as a practical matter, to rely on the antitrust laws as an alternative to regulation? An important related question is whether it is desirable to switch from regulation to reliance on market forces immediately, or whether special allowances should be made for the distortions in market structure and market dominance created by regulation.

As a general proposition, I would suggest that marketplace regulation and the antitrust laws can work and that the industry can move rather quickly to relying on antitrust laws in lieu of regulation. I would like to test that proposition in this paper, which considers what many regard as the toughest case, namely the intercity bus industry. It is a truism that Greyhound dominates this industry more than a single firm dominates any other transportation industry, and in the past, the concern has been expressed by smaller carriers -- including Trailways, the only other national bus carrier -- that any significant degree of economic deregulation would simply be a license to Greyhound to exploit its position, to the detriment of the public.

Both Greyhound and Trailways -- and the bus industry collectively through the American Bus Association -- supported the modest, though still significant, reforms in the Bus Regulatory Reform Act of 1982. In this paper, I shall consider what might happen if Congress went further and simply abolished economic regulation of the industry by the Interstate Commerce Commission. I shall also consider how the specific reforms in this Act affect industry

structure and competition and whether these reforms will help or hinder a move toward the end of ICC regulation. Specifically, are present antitrust remedies enough to protect the public and small carriers from anti-competitive practices in the absence of ICC regulation, or is some more explicit form of regulation needed to curtail Greyhound's already strong position in the market? The timing of such an inquiry is pertinent, since the Reagan Administration is planning shortly to introduce a bill to phase out or "sunset" ICC regulation of motor freight carriers, and if that effort succeeds, buses may be next.

A. Industry Structure

The intercity bus industry comprises 1,330 firms, which operate 21,900 buses and earned operating revenues of nearly \$2 billion in 1980.⁶ These statistics do not, however, tell the full story; economic concentration, particularly concentration of revenues, "is overwhelming in the bus industry."⁷ Of the industry's 1,330 firms, 46 large interstate Class I carriers -- those earning at least \$3 million annually -- accounted for 70% of all passenger revenues in 1979.⁸ In 1979, these large Class I carriers operated 89% of "regular-route" passenger miles and earned 92% of the revenues from this service.⁹ By contrast, most of the roughly 1,250 smaller Class II and Class III carriers¹⁰ garnered much less revenue from regular-route service than from charters and special tours -- service that constitutes only a small part of Class I carriers' operations.¹¹ In a very real sense, then, the industry is highly segmented: Class I carriers principally provide scheduled regular-route service, while smaller companies specialize in charters and tour service.¹²

Among the 46 large Class I carriers, only Greyhound and Trailways have nationwide route systems, and these two firms dominate the industry. In 1980, they captured 80% of Class I carrier revenues, Greyhound earning 59% and Trailways 22%.¹³ In comparison, the third largest intercity carrier, Carolina Coach.,¹⁴ earned less than 2% of total Class I carrier revenues in 1980.

This great market concentration might be explained on grounds of economic efficiency if the bus industry were characterized by large fixed costs which would create significant economies of scale and barriers to entry.¹⁵ There exists no evidence, however, of high fixed costs in the intercity bus industry. For instance, depreciation and amortization comprised less than four percent of the operating expenses of Class I carriers in 1978 and 1979,¹⁶ and new buses, the principal industry expense, cost only about \$120,000 each in 1981.¹⁷ Moreover, a substantial market exists for less expensive,¹⁸ used buses.

The presence of so many small bus carriers provides the most compelling evidence,¹⁹ buttressed by several economic studies, that there are no significant economies of scale in the intercity bus industry. Indeed, one Department of Transportation survey indicated that many small intercity bus companies had average costs²⁰ significantly lower than Greyhound, and even the American Bus Association has agreed that "small, regular route carriers can compete²¹ successfully with larger carriers." Thus, concentration in the bus industry cannot be attributed to economies of scale or other market factors. Rather, the two-firm industry dominance has been engendered by regulatory policies which have promoted concentrated development by looking favorably on mergers and acquisitions while

discouraging new entry.

Such was the thrust of state regulators, which treated bus firms as public utilities prior to passage of the Motor Carrier Act of 1935. Because it was difficult to acquire new operating authority on one's own in this period, mergers and acquisitions were a popular means of expanding operations, and this policy was favored by state regulators, which equated size with stability. It was in this environment that Greyhound skillfully exploited the regulatory process to grow in size. In February 1936, a small group of regional carriers joined the National Trailways Bus System (NTBS) to offer coordinated interline services in competition with Greyhound. Within this group, one firm -- Trailways Inc.,-- became dominant, and NTBS grew into the second largest intercity bus operation in the country. The ICC continued this public utility regulatory approach, limiting new entry by firms into the industry and preventing head-to-head competition along the same routes. The result is the present industry structure. 22

B. Antitrust Remedies for Anti-Competitive Conduct

Given Greyhound's superior position in the industry, its national route network and terminal system, there may be reason for smaller carriers to be concerned about anti-competitive practices. The balance of this paper will consider anti-competitive activities in which Greyhound may seek to engage, and how such activities would be regulated under the antitrust laws.

It should be noted that some of the smaller carriers' concerns may be overstated. The empirical evidence suggests that there are no economies of scale in this industry, and smaller companies are likely to have lower costs than Greyhound, which will help

them compete and provide replacement service efficiently and at remunerative levels.

That smaller carriers have little to fear in the way of monopolistic behavior is suggested by experience in Florida, where all regulation of intrastate bus operations ceased in July 1980. Greyhound has not monopolized service, and indeed, smaller companies perceive deregulation as a significant opportunity for expansion.²³ Similarly, fears were expressed during debates on the Airline Deregulation Act that the trunk airlines would swamp the smaller companies, but in fact, the regional airlines are prospering, while their larger competitors are losing market shares.

Against this background, then, we consider specific anti-competitive conduct in which Greyhound may seek to engage against smaller firms.

1. Setting Predatory Fares or Rates

Defining a predatory fare is difficult at best, and discussions of predatory pricing in case law and the literature have suffered from the "failure to delineate clearly and correctly what practices should constitute the offense, and exaggerated fears that large firms will be inclined to engage in it"; allegations of predatory pricing often ignore "the possibility that the alleged predator's costs is . . . more than covered by his price."²⁴ Areeda and Turner posit that predatory pricing makes economic sense only if (1) the putative predator has greater financial staying power than its competitors and (2) the predator has substantial chance that its losses will be exceeded by the profits to be earned after the competition is destroyed.²⁵

In the intercity bus industry; where fixed costs are relatively

low, where entry barriers could be significantly reduced by regulatory reform and where Greyhound is a high-cost carrier, it is doubtful that Greyhound could engage in predatory conduct, however diffused. This seems particularly true if, as the evidence suggests, Greyhound's costs are higher than its smaller competitors. Even if Greyhound were to force out a competitor on a particular route through cut-rate pricing, the ease of entry under a deregulated environment would make it very difficult for Greyhound to avoid new competition that would siphon off potential monopoly profits. Moreover, if Greyhound were to face the possibility of new competition not just on a few routes, but throughout its system, it seems highly doubtful that predatory pricing would or could make economic sense for Greyhound for any sustained period. Clearly, some smaller companies could be hurt should Greyhound cut its prices. However, simply lowering fares to meet competition need not violate the antitrust laws -- and indeed could have substantial public benefit -- so that a general fare reduction might still be legal under the antitrust laws if Greyhound earns a profit.

2. Entering a Market and Driving Out a Competitor

If ICC entry controls for fit carriers were simply abolished, Greyhound would not violate the antitrust laws simply by entering a new route, even if the incumbent withdrew. Similarly, Greyhound could have a "monopoly" on a route that would not necessarily be illegal and might even benefit the public, for example, by establishing through-service on a single carrier. It seems unlikely, moreover, that a court reviewing a monopolization claim would consider a single city-pair route or even the surrounding region

to be the relevant market, absent more egregious conduct on the
part of Greyhound.³⁰

Under an open entry regime, some "bridge carriers" likely would be absorbed into larger companies or would decide to go out of business, but this would not necessarily be contrary to the public interest. Bridge carriers are usually small companies providing direct service between two points, while entry restrictions under ICC regulations often required a larger carrier to operate between those points only in a longer, more circuitous way.³¹ Artificially reserving such direct service to bridge carriers does keep smaller companies in business, but it obviously can make travel more difficult and time-consuming for passengers who would be forced to switch to a bridge carrier to obtain the most direct route between two points.

3. Refusing to Cooperate With Competitors

a. Interline Service -- Bus companies traditionally engage in a variety of cooperative activities designed to facilitate passenger travel. For example, they offer "interline" service, allowing passengers to make connections between routes that may not be served by one carrier. Such interlining is facilitated if carriers lease their terminal space to others, quote each other's fares, and make scheduling information about other lines available to passengers. Given the nature of intercity bus transportation, in a deregulated environment such practices would in all probability be continued voluntarily, for economic reasons, particularly if carriers realign their route structures to achieve greater efficiencies. Suppose, for example, that in a less regulated environment

Greyhound's route system and high cost structure make it advisable to concentrate on long-haul markets and to drop marginal or short-haul service, which presumably would be picked up by lower-cost regional carriers. Greyhound would then be more dependent on the passenger "feed" provided through these smaller companies, so that its own economic interests would dictate voluntary interlining.

If, however, Greyhound refused to interline, an affected carrier could receive monetary and injunctive relief under the antitrust laws -- provided that Greyhound were acting with an anti-competitive purpose and had the power to originate a substantial amount of traffic at the points in question. So³² the court held in Mt. Hood States, Inc. v. Greyhound Corp., where Greyhound tried to drive a competing carrier out of business by, inter alia, refusing to interline. Moreover, the conclusion that Greyhound could violate the antitrust laws by refusing to interline is consistent with other decisions requiring a firm with requisite market power to refrain from using that³³ power to preserve or extend its market share.

b. Terminal access -- Access to Greyhound terminals by competing carriers raises related problems, because interlining requires that passengers be able to catch connecting buses quickly and conveniently. The fear has been expressed that Greyhound might attempt to deter interlining or steer passengers³⁴ toward its own service by limiting access to its terminals.

This problem is somewhat more difficult than questions of interlining, particularly because bus terminals, unlike airports, are privately owned and are subject to legitimate space limita-

tions. Various decisions, however, suggest that the antitrust laws obligate Greyhound to make its terminals available to competing carriers. Under the "bottleneck theory" of antitrust liability,³⁵ "a business or group of business which controls a scarce facility has an obligation to give competitors reasonable access to it."³⁶ For example, in United States v. Southwestern Greyhound Lines, Inc.,³⁷ Greyhound and other bus companies operated a terminal used by a small, local line. The local line was evicted from the bus terminal after it arranged with another carrier to offer competing interstate service. While the district court acknowledged that Greyhound had no obligation to accept any carrier as a tenant, the eviction of the local bus line, motivated by anticompetitive animus, was found to be a violation³⁸ of the antitrust laws.

Thus, case law clearly suggests that Greyhound has a duty to deal with its competitors on a reasonable and nondiscriminatory basis in allowing them to use terminal space, and can be liable for failure to do so. Indeed, by the terms of a 1957 consent decree that ended an antitrust suit brought by the Justice Department, Greyhound is enjoined from discriminating against "a bus operator, using a terminal owned or controlled by [Greyhound] in the provision of usual terminal services and facilities . . . including, but not limited to, the sale and issue of tickets, the routing of passengers, and the dissemination of travel information."³⁹

While terminal access for smaller carriers may be adequately ensured by the antitrust laws, the problems presented by access to competitors' facilities deserve thorough examination. The Bus Regulatory Reform Act directs the Secretary of Transportation

and the ICC to investigate the ownership, location, and adequacy⁴⁰ of bus terminals in providing passenger service. This study should be highly useful in determining what steps, if any, Congress should take in this area. It may well be true that the 1957 consent decree -- combined with the "bottleneck theory" of antitrust liability -- adequately protects smaller carriers. On the other hand, there may be the need for a mandatory access⁴¹ provision of the sort that already exists for the railroads. At this stage, more information is needed.

c. Proscription of unfair practices under the Interstate Commerce Act -- Aside from refusing to interline or barring competitors from terminals, Greyhound might engage in other anti-competitive actions, such as routing traffic around a bridge carrier to drive it out of business, refusing to quote an interlining carrier's fare, or arranging schedules to preclude connections. While such actions may be an illegal refusal to deal, upon a proper showing of Greyhound's dominance and anti-competitive purpose, they may also be proscribed under a provision of the Interstate Commerce Act requiring that a "practice related to transportation⁴² or service provided by a carrier . . . must be reasonable." Although broadly worded, the ICC could use this section more vigorously to prosecute and deter "unfair or deceptive practices or unfair methods of competition" in the same way those practices are proscribed for "nonregulated" industries by section 5 of the⁴³ Federal Trade Commission Act. As part of full deregulation, Congress could transfer to the FTC the authority to regulate such anti-competitive practices in the intercity bus industry, creating a remedy for small carriers injured by any unfair practices.⁴⁴

C. The Bus Regulatory Reform Act and Beyond

As this analysis demonstrates, the antitrust laws provide remedies for dealing with specific anti-competitive practices in the event ICC regulation over this industry were to be abolished. The Bus Regulatory Reform Act of 1982 makes modest steps towards reforming ICC route and rate controls and should be considered as more of a "regulatory reform" bill than a "deregulation" law.

Ironically, in its efforts to reduce ICC entry controls, the Act may have enhanced the position of large regular-route carriers such as Greyhound and Trailways, at the expense of smaller carriers, which are the most likely new entrants into this field. Smaller carriers depend heavily on charters and tour operations which, with their efficiencies such as higher load factors, can be more lucrative than regular-route service.

The Act creates differing entry standards for these different types of service. All applicants for ICC operating authority must continue to prove that they are "fit, willing and able,"⁴⁵ i.e., that they can meet federal safety and insurance standards. The second prong of the traditional test -- that the new service is consistent with "the public convenience and necessity" -- is altered, however. For regular-route service, there is erected a new, supposedly less restrictive standard, which requires simply⁴⁶ that the new service be in the "public interest." For carriers seeking to offer charter or tour operations, there is no requirement⁴⁷ other than fitness. The problem with this two-tiered system is that it makes entry very easy into the most lucrative part of the bus industry, which is dominated by the smallest firms. At

the same time, the inquiry into the "public interest" in new regular-route service perpetuates regulatory barriers which a large, established incumbent such as Greyhound would find easy to exploit against smaller firms seeking to expand their regular-route operations.

The problem with the "public interest" standard is that it is vague and thus subject to expansion or contraction, depending on the shifting composition and regulatory attitudes of ICC Commissioners over time. So long as large incumbents could use the "public interest" inquiry to drag out the regular-route application process and to run up the cost of processing a regular-route application, smaller carriers might be deterred from bothering to apply. At the same time, these smaller carriers would find themselves squeezed from the other direction, as new entrants find it easy to expand into their existing markets for charter and special tour operations. Since existing, smaller carriers are the most likely new entrants into regular-route service, by virtue of their current presence in the industry, it would certainly be paradoxical if a law designed to liberalize entry had the effect of making it difficult for these firms to capitalize on the opportunity.

If anything, the flaw in the Bus Regulatory Reform Act is that it did not go far enough in establishing a "fitness-only" standard for regular-route service as well as other services. A "fitness-only" test would have quickly provided for more service in all segments of the industry and a more rapid and efficient reallocation of bus services. Because the two-tiered entry system in the 1982 Act may have minimal effects in loosening entry into the

regular-route market, some caution may be called for before proceeding directly to full economic deregulation in this industry. It would be useful first to determine the exact impact of the 1982 Act on entry and service patterns, to learn the extent to which new regular-route service is being provided, and by whom, and to what extent ICC procedures are still a significant barrier to entry by smaller firms. If, at the end of, say, two years, the impact of the Act has been slight, it may be proper to abolish the "public interest" entry standard for regular-route service, while at the same time maintaining for a two year transition period those provisions of the Interstate Commerce Act which allow the ICC to regulate anti-competitive behavior, e.g., the power to suspend a predatory rate, the prohibition against unfair and anti-competitive practices, or mandatory interlining. The rationale for maintaining this regulatory authority during a transition to full deregulation is to give smaller carriers a chance to take advantage of opportunities furnished by further reforms as rapidly as possible. Antitrust laws can work, but, as the Mt. Hood case shows, they can be expensive and time-consuming remedy and provide relief long after the fact. If regulatory reform is to be ultimately successful, there is a premium on rapid entry into all segments of the market; under circumstances it might be useful during a transition to full deregulation to maintain explicit regulatory restraints on anti-competitive actions by Greyhound, so that any such conduct could be quickly remedial or barred, giving smaller carriers a chance to become established in the market.

If there is anything which the regulatory reform movement in

transportation has taught us, it is that reforms usually beget other reforms. The Bus Regulatory Reform Act of 1982 is a step in the right direction towards abolition of ICC route and rate controls. The challenge for the future is to monitor the implementation of that Act and to design follow-up legislation which is carefully crafted to enhance public service by promoting greater competition and efficiency.

Persons interested in a more extensive analysis of the regulatory reform issues discussed in this paper are referred to my article, "Regulatory Reform in the Intercity Bus Industry," published in volume 15, number 1, pp. 1-44 of the University of Michigan Journal of Law Reform (Fall 1981). A portion of this paper appeared in slightly different form in that article, which is reprinted with permission.

Readers are also referred to the article by a former colleague of mine. Miriam Cutler, "Antitrust and Deregulation: The Usefulness of Section Two of the Sherman Act in Restraining Anticompetitive Behavior; the Intercity Bus Industry," volume 49, no. 1, pp. 33-50, of the ICC Practitioners' Journal (Nov. - Dec. 1981).

1

Motor Carrier Act of 1980, Pub. L. No. 96-296; Staggers Rail Act of 1980; Pub. L. No. 96-448; Household Goods Transportation Act of 1980, Pub. L. No. 96-454; Bus Regulatory Reform Act of 1982, Pub. L. No. 97-261.

2

Pub L. No. 95-504.

3

Federal Aviation Act §1601, 49 U.S.C. §1551.

4

49 U.S.C. §10706(b)(3)(D). The Motor Carrier Ratemaking Study Commission failed to file its report by 1 January 1983, thus extending the deadline for antitrust immunity in this area from 1 January 1984 to 1 July 1984.

5

See Comments of Trailways, Inc. at 37-143, filed before the ICC in Entry Flexibility, Regular Route Passenger Service, ICC Ex Parte No. MC-133.

6

American Bus Ass'n, America's Most Fuel Efficient Passenger Transportation Service 5 (1981) (hereafter "1981 ABA Report"). Of these, roughly 850 are ICC-regulated interstate carriers. H.R. Rep. No. 97-334, 97th Cong., 1st Sess. 21(1981) (hereafter "House Report").

7

ICC Bureau of Economics, The Intercity Bus Industry: A Preliminary Study 45 (1978) (hereafter "ICC Preliminary Study").

8

House Report, supra note 6, at 53, table 4.

9

Management Analysis Center, Inc., Deregulation of the Intercity Bus Industry 12-13 (1981) (hereafter cited as "MAC Deregulation Study"). "Regular-route" service is scheduled service offered between specified points over specified highways, and may include stops at intermediate points.

10

Class I carriers have operating revenues in excess of \$3 million annually; Class II carriers have operating revenues between \$1 million and \$3 million; and Class III carriers have operating revenues of less than \$1 million. U.S. Dept. of Transportation, Intercity Bus Service in Small Communities 3 (1980) (hereafter "DOT Small Community Study").

11

MAC Deregulation Study, supra note 9, at 12. "Charter" service involves transportation of a preexisting group of passengers between a common origin and destination, e.g., a bus chartered

to take a football team to and from a game. "Special" or "tour" service is similar to charter service, but the carrier forms the group, such as when a company sponsors a sightseeing tour for which members of the public purchase tickets. Senate Comm. on Commerce, Science and Transportation, 95th Cong., 1st Sess. Intercity Domestic Transportation System for Passengers and Freight 95-96 (Comm. Print 1977) (hereafter "Senate Study").

Bus companies also provide "package express" service as part of their regular-route service in order to move small packages.

This paper will primarily discuss regular-route service. For a discussion of the other types of services, see ICC Preliminary Study, supra note 7, at 9-11. See also Interstate Commerce Comm'n. Report of the Bus Industry Study Group, chs. I, IV & V (1979) (hereafter cited as "ICC Bus Study Group Report").

12

MAC Deregulation Study, supra note 9, at 12. In 1979, for instance, Class II and III carriers earned only 8% of the revenues from regular-route service, but captured 61% of the revenues for charters and tour services. Id.

13

Id. at 16. These figures include Greyhound Lines, Inc.'s five wholly owned Class I subsidiaries and Trailways, Inc.'s 13 wholly owned Class I subsidiaries.

14

House Report, supra note 6, at 22.

15

See R. Lipsey & P. Steiner, Economics 267-69 (6th ed. 1981); E. Mansfield, Microeconomics: Theory & Applications 345-46 (2d. ed. 1975).

16

American Bus Ass'n, America's Most Fuel Efficient Passenger Transportation Service (1980).

17

Statement of Theodore C. Knappen, Sr. Vice President, Trailways, Inc., at 9, Bus Regulatory Reform, Hearings before the House Public Works Comm. (1980).

18

Comments of the Council on Wage and Price Stability, at 5, Entry Flexibility Regular Route Passenger Service, (ICC Ex Parte No. MC-133).

19

See id. at 3-6; E. Pinkston, The Intercity Bus Transportation Industry 15-22 (unpublished Ph. D dissertation Yale University) (1975); Fravel, Returns to Scale in the U.S. Intercity Bus Industry, in Proceedings -- 19th Annual Meeting 551-60 (Transportation Research Forum 1978).

Pinkston suggests, however, that there may be advantages to a large scale of operations from a marketing standpoint, especially on longer distance travel, where passengers will wish, if at all possible, to stay on the same bus for the full length of the trip. Even if such through-service is not available, a larger company benefits from size in its ability to plan schedules to minimize layovers. Furthermore, the larger the carrier, the less likely it will be that a passenger will have to go to a separate terminal to change buses, or to deal with more than one company in handling tickets. E. Pinkston, supra, The Intercity Bus Transportation Industry, at 22-25.

20

See generally U.S. Dep't of Transportation, National Transportation Trends & Choices (To The Year 2000) (1977).

21

Comments of Am. Bus Ass'n, at 9a, Entry Flexibility, Regular Route Passenger Service, (ICC Ex Parte No. MC-133).

22

ICC Preliminary Study, supra note 11, at 1-5 for a lengthier discussion of this history.

23

See ICC, Commission Studies of Florida Motor Carrier Deregulation: An Interim Report 3-9 (April 1981). See also U.S. Dep't of Transportation, Deregulation and Intercity Bus Operations: Florida: A Preliminary Study 67-69 (1981).

24

Areeda & Turner, Predatory Pricing and Related Practices Under Section 2 of the Sherman Act, 88 Harv. L. Rev. 697, 698 (1975) (footnotes omitted) (hereafter cited as "Areeda & Turner"). See also Scherer, Predatory Pricing and the Sherman Act: A Comment, 89 Harv. L. Rev. 869 (1976); Areeda & Turner, Scherer on Predatory Pricing: A Reality, 89 Harv. L. Rev. 891 (1976); Scherer, Some Last Words on Predatory Pricing, 89 Harv. L. Rev. 901 (1976). For a fuller discussion of destructive competition, see F. Scherer, Industrial Market Structure and Economic Performance 198-206 (1970).

25

Areeda & Turner, supra note 24, at 698.

26

See E. Pinkston, supra note 19, at 15-16. Pinkston's study, drawing on 1972 data, found that average costs per bus-mile ranged from \$0.45 to \$4.10, and that the variation was not correlated with output. Of the 72 carriers surveyed, 39 had average costs between \$0.60 and \$0.80 per bus-mile. Interestingly, Greyhound's average cost was on the high side, at \$0.86 per bus-mile. Id. at 17-18.

A more recent analysis, performed by the Council on Wage and Price Stability and based on 1978 data, surveyed the costs per bus-mile. Again, there was no correlation between this extreme variation and output: 31 carriers had costs below \$1.40, and 12 carriers (including Greyhound) had costs above that level. Comments of the Council on Wage and Price Stability, supra note 18, at 4.

Even among the industry giants, there are disparities in costs. In the first quarter of 1981, Greyhound's total operating expense was \$1.986 per bus-mile, a figure 12% higher than Continental Trailways' cost of \$1.7666 per bus-mile. ICC Office of Special Counsel, Protest and Petition for Suspension and Investigation, ICC Suspension Case No. 70526, app. B, at 4 (Sept. 28, 1981).

27

See Areeda & Turner, supra note 24, at 698-99. In 1981 testimony to the House Public Works Committee during its consideration of the 1982 Act, Greyhound called predatory pricing in the bus industry "foolish, if not suicidal." Statement of William L. McCracken, Sr. Vice President, Greyhound Lines, Inc., at 34.

28

See e.g., International Air Indus., Inc. v. American Excelsior Co., 517 F. 2d 714, 726 (5th Cir. 1975), cert. denied, 424 U.S. 943 (1976).

29

See Telex Corp. v. International Bus. Mach. Corp., 510 F.2d 894, 926 (10th Cir.), cert. dismissed, 423 U.S. 802 (1975).

30

In light of Greyhound's national route network, national fare system, and national planning, it can be argued that the relevant

market for monopolization claims in intercity bus service is national under the doctrine of *United States v. Grinnell Corp.*, 384 U.S. 563, 575 (1966). Even with a national market, however, there may be regional submarkets in which violations occur. For example, a three-stage region was the area in which anti-competitive conduct was found to exist in *Mt. Hood States, Inc. v. Greyhound Corp.*, 555 F.2d 687 (9th Cir. 1977), vacated and remanded on other grounds, 437 U.S. 322 (1978).

31

This was the situation in *Mt. Hood Stages v. Greyhound*, 555 F. 2d. 687 (9th Cir. 1977), vacated and remanded on other grounds, 437 U.S. 322 (1978), where Mt. Hood was a "bridge carrier" operating direct service between Klamath Falls and Biggs, Oregon, while Greyhound operated more roundabout service that would have caused passengers to ride 110 more miles on a San Francisco-Spokane trip than they would have if they had switched to Mt. Hood. For a discussion of the special situation of bridge carriers, see ICC Bus Study Group Report, supra note 11, at 34-35.

32

555 F. 2d 687 (9th Cir. 1977), vacated and remanded on other grounds, 437 U.S. 322 (1978).

33

See e.g., *Otter Tail Power Co. v. United States*, 410 U.S. 366 (1973) (utility's refusal to wholesale power to or allow the use of transmission lines by municipal distributors found violative of the Sherman Act); *Lorain Journal Co. v. United States*, 342 U.S. 143 (1951) (refusal by sole newspaper in area to accept advertisements from retailers also advertising with competing radio station held illegal); *Eastman Kodak Co. v. Southern Photo*

Materials Co., 273 U.S. 359 (1927) (refusal to supply wholesaler with goods at other than retail prices held unlawful); United States v. Klearflax Linen Looms, Inc., 63 F. Supp. 32 (D. Minn. 1945) (refusal by sole manufacturer of material to sell to distributor so that distributor could compete for government contract held in violation of §2 of the Sherman Act).

Thus, Greyhound's use of its dominant market power to bar a competitor from the market by refusing to deal might be a violation of the antitrust laws. See Crew, Do Antitrust Laws Provide a Feasible Alternative to Regulation?, 47 ICC Prac. J. 673, 681 (1980).

34

See House Report, supra note 17, at 49.

35

See Mid-Texas Communications Sys., Inc. v. American Tel. & Tel. Co., 615 F. 2d 1372, 1387 n. 12 (5th Cir. 1980).

36

Byars v. Bluff City News Co., 609 F. 2d 843, 856 (6th Cir. 1979).

37

[1953] Trade Cas. 68,355 (N.D. Okla.).

38

See also Gamco, Inc. v. Providence Fruit & Produce Bldg., Inc., 194 F. 2d 484 (1st Cir.), cert. denied, 344 U.S. 817 (1952) (wholesaler tenant's eviction from building owned by other wholesalers in most convenient location held unlawful); United States v. Terminal R.R. Ass'n, 224 U.S. 383, 411 (1912) (carriers' prevention of competing carrier's use of railroad terminal held violative of Sherman Act where geographic constraints limited city to only one station); Associated Press v. United States, 326 U.S. 1 (1945) (association's bylaws restricting competitors of members from membership found unlawful).

39

United States v. Greyhound Corp., (1957) Trade Cas. 73,086,
73,089 (N.D. Ill.).

40

Pub. L. No. 97-261 §26, (1982)

41

See 49 U.S.C.A. §11103 (West Supp. 1981).

42

Id. § 10701(a).

43

15 U.S.C. § 45 (1976 & Supp. IV 1980).

44

In this connection, it should be noted that private antitrust litigation, while expensive and time-consuming, is always available. In the leading case of *Mt. Hood Stages, Inc. v. Greyhound Corp.*, 555 F. 2d 687 (9th Cir. 1977), vacated and remanded on other grounds, 437 U.S. 322 (1978), Greyhound was found to have attempted to run Mt. Hood out of business by refusing to quote Mt. Hood's fares to potential interline passengers, by arranging schedules that routed passengers around Mt. Hood's more direct bridge service, by refusing to distribute Mt. Hood's schedules in Greyhound stations, and by ending interline service with Mt. Hood. Because of the novel legal issues in the case, Mt. Hood did not recover damages for over a decade. Nonetheless, the treble-damage award was \$13.1 million, plus \$1.25 million in attorneys' fees and costs.

45

49 U.S.C. § 10922 (c)(1)(A) (1983); S. Rep. No. 97-411,
97th Cong., 2d Sess. 15-16 (1982).

46

Id. See also 49 U.S.C. § 10922 (c)(2)(B) (1983).

47

49 U.S.C. § 10922 (c)(1)(B) (1983).

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ECONOMIC CONSEQUENCES OF THE 1980 MOTOR CARRIER ACT
ON FREIGHT SERVICE TO RURAL AREAS

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Economic Consequences of the 1980 Motor Carrier Act on Freight Service
to Rural Areas

Opponents of the increased regulatory relaxation in the motor carrier industry have argued that the longterm economic consequences of deregulation will be adverse to small communities and rural areas.

"... thousands of small towns and communities throughout the nation will be in a lot of trouble if the trucks don't run. It's becoming clear that the trucks won't run to thousands of communities if the industry is deregulated."¹

They contend that freer market adjustments by carriers would result in elimination of service to small communities, or at least a deterioration in quality of service with the possibility of sharply increased freight rates charged to rural customers.

The purpose of this article is to report on the results of two freight surveys of 290 randomly selected shippers and receivers in rural areas of Georgia, North Carolina, and South Carolina.² The surveys were undertaken to determine the extent to which loss of service, higher freight rates, or service quality deteriorations, if any, have occurred in these rural areas between 1979 (first interview) and 1981 (second interview). This information contributes to the debate over the economic consequences of regulatory reform of the motor carrier industry, as exhibited by the implementation of the Motor Carrier Act of 1980, which became effective in July of that year.

Legislative Intentions with Respect to Preservation of Freight Service
to Rural Areas

During Congressional testimony on the possible impacts of the proposed Motor Carrier Act of 1980, fear of adverse consequences on rural communities was expressed:

"Total deregulation of the motor carrier industry is not practicable. The regulatory burden should be reduced, with due attention to ... service to small communities ... There is a legitimate concern that carriers would concentrate on the more profitable routes at the expense of the marginally profitable service to smaller communities. Some safeguards must be retained to ensure an adequate level of service to smaller communities."³

In response to these concerns, the language of the Motor Carrier Act includes special reference to the need to maintain service levels in these communities. Section 4(3)(E) makes it a goal of national transportation policy to "provide and maintain service to small communities and small shippers."⁴ Congress insisted on conducting a series of investigations and oversight hearings on the Motor Carrier Act.⁵

To contribute to this inquiry about possible outcomes of regulatory reform the author has collected two data sets, "before" and "after" studies of the nature of freight service in rural areas. This article provides several alternative models of the theoretic outcomes of regulatory reform on rural development, and using data from a longitudinal study, tests a selected number of the theoretic issues involved in the debate.

Methodology of Current Study⁶

In 1979, 290 interviews were collected from shippers and receivers randomly selected from business listings in the telephone directories of designated rural⁷ counties. These responding firms were asked to list the modes used (TL motor carrier, LTL motor carrier, parcel service, rail, etc.) and responses to survey questions were weighted by the number of modal uses reported. Thus tabular information presented in this article is reported by modal usage.

To ensure representation of larger firms, a minimum of five of the largest shippers and/or receivers in each sampled county was included in the sample. In 1981, these 290 firms were reinterviewed to ascertain the changes in freight service availability, quality and cost, as perceived by traffic managers, general managers, or other persons in charge of the firm interviewed.

Initial interviews were conducted in person by graduate students using a prepared interview schedule which identified nature of freight shipments, choice of mode and carrier, evaluations of quality of service, and enumerated respondent perceptions of any service problems encountered in the period 1978-1979. Followup interviews in 1981 took place by telephone or in person, and asked questions about changes in carrier availability, extent of competition among carriers, and service

quality.⁸ The same firms were interviewed in both surveys.

Alternative Theoretic Models of the Impact of Regulatory Relaxation on Service to Rural Areas

Model I: Adverse Impact Model

Let us assume that in the pre-regulatory reform period a limited number of firms (m) with capital capacity $q(m)$ were offering service to shippers and receivers in the designated rural areas to be surveyed. They did so with an array of freight charges assessed for those freight shipments. Let us designate the array of charges as $p_1 \dots p_n$ where each charge is a function of volume, weight, extent of consolidation of shipments, value of product and other factors, but which is predetermined by a regulatory process which fixes price by commodity designation. When $p_1 \dots p_n$ is fixed, the array may be designated by a vector \bar{p}_i . In a non-regulated industry, prices vary with fluctuations in demand and supply, unless supply is so elastic as to adjust completely to minute changes in demand. In a regulated environment, price adjustments are to be sought through a legal process, entry and exit are in theory controlled, and legal compulsion, rather than necessarily equilibrium price, compels service to "uneconomic areas." Thus, it is possible that \bar{p}_i may be greater than or less than \bar{p}_i^* , which is the charge at equilibrium of demand and supply for each rural market. Where \bar{p}_i is less than \bar{p}_i^* , a theoretic cross-subsidy exists between rural and urban freight markets, since the full cost of service to rural areas is not paid by the shipments going to or coming from these places.

According to the "adverse impact model", service will be interrupted to rural areas because of the following assumptions believed to hold under conditions of freer entry and exit:

- (1) Profit margins on rural motor carrier freight service are believed to be lower than on urban service because shippers tend to be smaller, less densely situated or for other reasons unable to muster large volumes of freight service. Since prices (or freight charges) are fixed, and costs are higher, by assumption, then profit margins must be lower. Thus $p_i^* < p_i^*$ and with the removal of price and service regulation, service will be shifted to more lucrative markets with higher profit margins, or prices for services will rise to equilibrium levels.
- (2) Supply is elastic for price (or charge) decreases but not for increases. Opening up new opportunities for certified authorities will not attract new firms into the industry, since the supply of alternative competitors is limited by insurance regulations, capital entry restrictions, by knowledge of shipper wants, or by lack of entrepreneurs in rural areas. According to this view, motor carrier firms will leave rural areas in favor of more lucrative markets, and few alternative suppliers are available to take their place.
- (3) Economic hardship will come to rural areas, since demand for motor freight transportation services is inelastic. Most areas are no longer served by rail service, and even if it were, the smaller, LTL shipments are most appropriate for motor carriage options. Transportation is an important element in the economy of rural areas, since raw materials or bulk industrial commodities must be transported to the larger urban markets, and retailers are dependent upon supply sources located at considerable distance from the areas in question.

Given these assumptions, it follows that relaxation of barriers to entry and exit of firms would result in (a) loss of number of competitor firms (or withdrawal of larger or more diversified motor carriers to be replaced by less competent firms with lower capacity); (b) declines in service quality as firms attempt to lower costs by making less frequent peddle runs to rural areas, by withdrawing specialized equipment, or by requiring freight be brought to central terminal points; or (c) considerable rise in freight charges, as shippers and receivers must pay more to retain service in competition with urban areas.

This model will be contrasted with two alternative models which suggest that the impact of regulatory reform would be neutral, or even positive in rural areas.

Model II: Neutral Supply Impact Model: with possibility of Price
(Rate) Increases

This model assumes that costs of freight service to rural areas are higher than the costs of freight service to urban areas, but that the free market mechanism will protect the supply of service to rural areas, provided that the relative price of rural freight to urban freight charges reflects those differentials in cost. Supply is assumed to have sufficient elasticity, reflecting the fact that new entrants will appear when the relative freight rates adjust. Economically viable shippers and receivers in rural areas are those which, though their transportation costs may be relatively higher because of their location, are able to maintain competitive prices for their product produced because the costs of other factors of production (land, labor or taxes) are lower than their urban competitors, with an effect which is sufficiently large to overcome the transportation cost disadvantage.

Under these assumptions, the advent of regulatory relaxation will occasion some adjustment in supply. Old transportation firms may migrate, but they can be replaced by other transportation firms (or growth of selected old firms) who know how to tailor their service and prices to the conditions of the rural areas and have cost control features appropriate to lower density conditions. Some increases may occur in freight charges during this process, but service availability and quality will be maintained or enhanced. Thus, the regulatory reform impact is non-destructive to economic viability of rural areas.

Model III: Positive Impact Model: with possibility of Price (Rate)

Decreases

Another model assumes that there were no cross-subsidies of urban to rural freight in the regulatory era, because firms have found ways to provide low-cost service to rural areas or have quietly withdrawn from the market by letting rights lie dormant. Further, it is assumed that the supply of profitable service to rural areas was artificially restrained by regulation, and that freer entry would result in the numbers of carriers serving or a corresponding increase in the capacity of existing carriers who can more easily extend their current authorities. The additional capacity leads to lower freight charges, simply by the removal of regulatory barriers to entry. Here, too, availability and quality of freight service are maintained or enhanced by regulatory reform.⁸

To test these alternative hypotheses it is necessary to gather critical data which are not immediately observable except by survey research.

Changes in the numbers of service providers

If the number of competing carriers is diminishing, evidence will be built for the "adverse impact model." The changes in the number of firms willing to supply transportation service to rural areas is a measure of the array of choices facing a rural shipper. By itself, however, it is an insufficient indicator because of varying capacities of freight service providers. Thus, if m firms with $q(m)$ capital capacity in the prederegulatory era are reduced to $(m-x)$ firms with $q(m-x)$ capacity in the post-deregulatory era, one can say that either (1) a

decrease in demand occasioned the change or (2) firms are with-drawing because of eliminated cross-subsidies.

Changes in the capacity of freight service providers

Even more significant than the numbers of service providers is the measure of total freight service capacity available to service the freight-moving needs of rural areas. It is conceivable that the numbers of competing carriers may decline, but service expands because of growth in capacity of the reduced number of firms serving the areas.

Changes in prices charged for moving freight

Trends in freight rates (and ancillary charges) which affect the price of moving a given shipment of freight shed light on the impact of regulatory reform. If rates are declining, there is evidence of positive impacts of regulatory relaxation and freer entry. Other effects such as general inflation, or rebate programs geared to total (urban plus rural) tonnage by a given shipper must be examined, however.

Changes in the relative prices charged for moving rural and urban freight

Adverse impacts of regulatory reform may show up in a widening gap between freight charges for urban and rural firms (or for large versus small firms if these are differentially distributed between urban and rural areas). From an efficiency standpoint, charges for freight service should reflect the full resource cost of service provision. If rural location occasions higher cost, relaxation of regulation may cause a shift in relative transportation charges between urban and rural areas.

Changes in service quality

One version of the "adverse impact" theory is that rural areas will continue to be served by some form of transportation, but the better,

more reliable firms will withdraw, taking with them the wider array of service options previously available in the regulated era. It is therefore important to learn whether rural shippers or receivers report deteriorations or improvements in service quality.

Empirical Findings

The "adverse impact" model was not supported by survey findings. The study examines number of competing carriers reported, firm by firm; the reported changes in service quality, the alleged changes in capacity and availability of equipment and, finally, trends in rates and freight charges. In the followup survey of 290 rural shippers and receivers in representative rural counties of Georgia, North Carolina, and South Carolina, the majority of respondents confirmed that the number of service competitors has, on balance, increased or remained constant for most of the reporting areas. Table I shows 22.5 percent of the respondents reported an increase in the number of certificated motor carriers serving their communities, 63.9% reported no change, and only 7.8% reported a decrease.

One can inquire whether the fifty-one responses which indicated decreased availability of carriers are predictable on the basis of distance to interstates or size of firm. The logit analysis reputed in Appendix A suggests that when both distance and size are entered either singly or in concert, neither adds to the capacity of the model to predict outcome. The variables of size and/or distance from interstates do not enable the model to predict whether a firm will report that fewer carriers are computing such a belief or report is in this sample independent of size or degree of accessibility.¹⁰

TABLE 1

Pattern of Change in Availability of
Carriers by Distance to Interstates
1980-1981

	<u>Increased</u>		<u>Decreased</u>		<u>Remained Same</u>		<u>Other*</u>		<u>Total</u>	
	No.	%	No.	%	No.	%	No.	%	No.	%
Readily Accessible to Interstates*	80	33.6	20	8.4	106	44.5	30	12.6	238	100.0
Inaccessible to Interstates	68	16.2	31	7.4	314	74.9	6	1.4	419	100.0
Total	148	22.5	51	7.8	420	63.9	36	5.5	657	100.0

* Includes "don't know" 123 cases (not included) did not respond to the question.

TABLE 2

Reported Changes in Quality of Motor Common Carrier
Freight Service by Distance from Interstates
1980-1981

	<u>No Change*</u>		<u>Service Quality</u> <u>Improved</u>		<u>Service Quality</u> <u>Deteriorated</u>		<u>Total</u>	
	No.	%	No.	%	No.	%	No.	#
Near (0-25 miles)	285	85.8	43	13.0	4	1.2	332	100.0
Far (26 miles or more)	349	77.9	70	15.6	29	6.5	448	100.0
Total	634	81.3	113	14.5	33	4.2	780	100.0

*This grouping all of those who did not experience either an increase or a decrease.

Service Quality

Further buttressing the finding that rural areas have not in the first year been adversely impacted by the consequences of the 1980 Motor Carrier Act, one notes in Table 2 that on balance the rural respondents report service quality increases rather than service quality decreases. Only 4.2 per cent noted declines in service availability or reliability. Furthermore, those which reported such declines are not characterizable by size of firm, degree of remoteness, or by geographic area. From Table 2, one notes that evaluation of the service provided by LTL and common carriers has remained largely constant between the 1979 and 1981 samplings. In 1981, over 80% reported no change in the quality of freight service. It is interesting to note that twenty-nine responses of the 349 possible from "inaccessible" rural areas reputed service deteriorations. Only four of the 285 "accessible" rural firms reputed service quality decline. Is this difference in propensity to report service erosion statistically significant? The logit analysis reported in Appendix 1 suggests that distance from interstate is a significant predictor of outcome. Firms at greater distance from interstates are more likely to report service declines but the effect is small, since most responses are not reporting deteriorations.¹¹ Interestingly, 14.5 percent said that service quality had improved since 1980. Only 4.2 percent reported deterioration. See Table 2.

Capacity and Equipment Availability

Changes in the capacities of current suppliers of service is more difficult to ascertain. None of the respondents complained that smaller, inferior carriers had replaced larger, more acceptable carriers in

the period 1979-1981. Only 13.5 per cent of the rural sample had need of specialized equipment (such as refrigeration); none of those needing special equipment complained of increases in difficulty of obtaining such equipment. Interviews with spokesmen from the intrastate regulatory agencies indicated that on balance the number of carriers, and their net capacities had probably increased over the period in question, despite a number of well-publicized bankruptcies which had occurred. Service options were expanded because of the pattern of expanding authorities for intrastate service in Georgia and North Carolina. In South Carolina a more stringent enforcement of intrastate regulation had, it appeared, restrained the number of new entrants.

Rates and Freight Charges

In the area of changes in rates, the majority of responding firms reported rate increases over the period 1980-1981 in the neighborhood of ten to twenty percent. Table 3 illustrates the pattern of response given by responding firms. Only a small percentage, 2.5 percent, reported actual declines in rates.

The author made an attempt to cross-check the accuracy of these reports. Since many of the firms do not directly pay their freight charges because shipments are sent on a prepaid basis, it is possible that some mis-reporting occurs. Those who claimed not to know the rates were deleted from the analysis. Three independent sources of information confirmed the general accuracy of these rate reports. First, interviews with intrastate regulatory agencies in the three states under survey (North Carolina, South Carolina, and Georgia) confirmed the general pattern of rate increases in rural areas. Some of these rate increases reflect allowable fuel adjustment surcharges; however, since

the LTL freight movements are more likely to be accompanied by rate increases and were granted lower fuel surcharge adjustments than TL freight, some of the effect must be from other quarters. A second confirmation of these rate increases comes from a survey of traffic managers known to route freight to these rural locations. These specialists have confirmed the perceptions of the rural respondents. Finally, a study of rate changes published by tariff bureaus for general commodity freight, nationwide, showed similar reports of rate increases, 1980-1981.¹³

TABLE 3

Reported Percentage Change in Rates by
Distance of Respondent to Interstates
1980-1981
(% in parentheses)

	<u>Decreased</u>		<u>Unchanged</u>		<u>Increased Less Than 10%</u>		<u>Increased More Than 10%</u>		<u>Total</u>	
	No.	%	No.	%	No.	%	No.	%	No.	
0-25 miles	8	3.0	49	(18.5)	59	22.3	149	(56.2)	265	100.0
over 25 miles	9	2.2	81	(20.0)	119	(29.5)	195	(49.3)	404	100.0
Total	17	2.5	130	19.4	178	26.6	344	51.4	669	100.0

Note: There were 111 non responses to this question, which were not included in the analysis.

Thus, it appears that rural shippers and receivers are correctly perceiving rate increases, despite recessionary conditions in the economy, and some over-capacity in the motor carriage industry in the states interviewed, and despite the presence of more, rather than fewer, competitors for their freight business. One suspects that Model II, a cost-push model, explains why a market-based pricing system may be pushing up rural freight rates. Higher resource cost in serving rural communities may be pushing rates up despite evidence of active inter-firm competition. Such a conclusion is very tentative, since more work must be done on the supply side to confirm or deny this hypothesis.

Do less accessible areas report higher than average rate increases as would be consistent with the Adverse Impact Model? From the logit analysis, the answer appears to be "no." In fact the opposite is true. Distance from interstates does appear as a significant predictor, but with a negative sign. Less accessible firms are less likely to report the highest rate increases.¹³

The explanation for the negative relationship may be continued competition by carriers in recession coupled with lower wage rates in rural areas leading to less upward pressure on rates in those areas. Larger firms should, other things being equal, be able to negotiate away rate increases. However, in this study size of firm does not play a role in predicting which firms will report that rates have gone up in excess of ten percent. These findings suggest that regulatory reform is beneficial to a wide range of firms not merely the largest or most accessible.

Most respondents attributed the changes in freight rates (and concomitant increases in freight charges) to general inflation rather than to the rural location or the advent of the Motor Carrier Act of 1980. In Table 4 one sees that 74.7% of respondents considered that inflation explained the trends in freight rates and charges. Their instincts here are congruent with the actual pattern of rate increases as compared with the producer price index, for example, which also rose approximately nine percent in the period 1980-1981.

Relative Price Changes in Urban and Rural Freight Rates

The tantalizing piece of information which is missing in the current analysis is the change in the relative prices of freight service for urban and rural shippers. The current study did not investigate a matched urban and rural sample; therefore, conclusions must be drawn from secondary sources. There is evidence that discounting practices are lowering freight charges, particularly for the larger firms based in urban areas.¹⁴

TABLE 4
Reasons Cited for Reported Rate Changes
1980-1981

	<u>Number</u>	<u>(%)</u>
General Inflation	361	74.7
Rural Location	33	6.8
More Competition	28	5.8
Less Competition	25	5.2
Reduced Service Demands	21	4.3
Increased Service Demands	13	2.7
Changes in Nature of Goods Shipped	<u>2</u>	<u>0.4</u>
	483	100.0

Conclusions

Of the three alternative hypotheses presented, the data do not seem to support either Model I (Adverse Impact Model) or Model III (Positive Impact Model). Those who feared that regulatory relaxation would be followed by abandonment of service to rural areas failed to appreciate the relatively elasticity of carrier supply, and the fact that new entrants could step in to replace any firms which withdrew. The data suggest that more, rather than fewer competitor firms are seeking the business of rural shippers and receivers. Moreover, the reported quality of service, or availability of needed equipment, has not deteriorated over the period under survey. Respondents rated the quality of contemporary service in LTL and TL modes at least as high as they did in the previous study.

The predicted positive effects of increased competition on reduction of rates has not materialized, however, calling into question some of the assumptions of Model III. Rate increases are not out of line with general inflation, however, and are not perceived by the respondents as being attributable to the adverse impact of regulatory changes.

One is left with some presumptive evidence in favor of Model II: that price (rate) adjustments are occurring in response to general inflation, and rural firms are reporting rate increases despite regulatory reform. However, the most inaccessible areas are not the predominant victims of rate hikes as they appear reported by small and large firms in urban and rural accessible and inaccessible areas. These rate increases are unlikely to override the locational advantage of lower labor and land costs of rural based firms, since most report that

transportation costs constitute less than ten percent of their production or operating costs, and cost advantages with respect to the other factors of production continue to make the rural businesses competitive. In the case of the small retailers in rural areas it is accepted practice to charge customers more per unit to offset the lower volume of sales and higher transportation cost per unit. Thus, one may conclude that the regulatory reform legislation has had no significant deteriorating effect on rural areas in terms of freight service availability or quality, and that price (rate) increases are not so large to affect the relative competitiveness of rural business.

Several caveats are important reminders of the tentativeness of these conclusions. First, the availability of service may be a reflection of depressed economic conditions and the oversupply of freight supply capacity during the period under study. As the longitudinal study continued, data collection in a period of greater prosperity should allow disentangling the effects of regulatory relaxation from those of general economic conditions. Second, the respondents are those based in rural areas; if more knowledgeable traffic managers who route the freight out to these areas from urban locations have a different view of the "quality of service" changes, it is possible that a different conclusion could be drawn. A new study of this point is about to be undertaken, and will be reported at a later date. Finally, the sanguine conclusions about the impact of reform on rural areas do not reflect questions addressed to the former or existing carriers; economic adjustments and costs of transition were not the focus of this article. Others are in the process of studying these aspects of reform legislation.

FOOTNOTES

¹ American Trucking Associations, Inc. "Small Town Blues," (Washington, D.C., July, 1979), p. 4.

² For a full discussion of methodology see Alice E. Kidder, Followup Study of Shipper/Receiver Mode Choice in Selected Rural Communities, NTIS, 1983. The response rate was in excess of eighty percent, since interviews were conducted in person or by telephone.

³ U.S. Congress, House, Committee on Public Works and Transportation, Examining Current Conditions in the Trucking Industry and the Possible Necessity for Changes in the Manner and Scope of its Regulations, Hearings Before the Subcommittee on Surface Transportation, (9th Cong., 1st Sess., 1980), p. 717.

⁴ U.S. Congress, House, Motor Carrier Act of 1980, (Pub. L. 96-296, 96th Cong., 1st Sess., 1980).

⁵ Ibid. "The Interstate Commerce Commission shall make a full investigation and study of motor carrier service to small communities (with emphasis on communities of population 5,000 and under), and shall submit a report, including legislative or other recommendations, to the president and Congress not later than September 1, 1982."

⁶ For a more detailed discussion of methodology, see Kidder, Alice E. and Harold G. Willis, Shipper Receiver Mode Choice in Selected Rural Communities, U.S. Department of Transportation, (Washington, D.C., June, 1980).

⁷ Rural: Pursuant to the definition used in the Detailed Characteristics, 1970 Census, rural population is defined as all persons not living in an urbanized area (area consisting of at least one city of 50,000 inhabitants or more in 1970 and the surrounding closely settled area that meets certain criteria of population density and land use), or in places of 2,500 inhabitants or more outside urbanized areas. Rural residents may be located in rural portions of extended cities. Extended cities are so designated because they have one or more large portions with relatively low population density.

⁸ For a copy of the questionnaires used in the survey, data tapes or other information about the study contact the author c/o Franklin Program in Transportation and Distribution Management, Syracuse University, 129 College Place, Syracuse, New York 13210.

⁹ McElhiney, Paul, Motor Common Carrier Freight Study, (Denver: Federation of Rocky Mountain States, Inc., May, 1975).

¹⁰ See Table A-3-VI of Appendix A.

¹¹ See Table A-3-III in Appendix A.

¹² Communication from U.S. Department of Transportation. Transportation Systems Center where this study is in progress, June, 1982.

¹³ See Table A-3-II in Appendix A.

¹⁴ Office of Policy Analysis, Interstate Commerce Commission, Highlights of Motor Carrier Deregulation Activities (Washington, D.C., December 4, 1980).

EFFECT OF REGULATORY REFORM ON MOTOR CARRIER FAILURES:
A PRELIMINARY ASSESSMENT

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ABSTRACT

The purpose of this study was to investigate whether the increase in motor carrier bankruptcies could be attributed to regulatory reform. This task was made difficult by the concurrent recession, the inception of which coincided with passage of the Motor Carrier Act of 1980.

The study attempts to achieve its purpose in two ways. First, it develops a working hypothesis that if the increase in failures is due to regulatory reform, one should observe that the failing motor carriers are unionized and have larger wage bills than non-failing carriers. Second, it compares the increase in intercity motor carrier failures with the increase in failures of intrastate motor carriers, which were not affected by regulatory reform. In both cases, the available evidence suggests that causes other than regulatory reform are primarily responsible for the increase in motor carrier failures.

1. Introduction

In recent years there has been a considerable increase in the number of motor carrier bankruptcies. These bankruptcies, especially of large firms, have received wide publicity and, on several occasions, have been attributed to regulatory reform or, more specifically, to the Motor Carrier Act of 1980 (hereafter referred to as the MCA). However, only anecdotal evidence has been offered to substantiate this claim.

There is a good reason for the lack of evidence. The passage of the MCA coincided with the inception of a recession, making it difficult to separate the effects of the recession from those of the MCA. Nevertheless, an analysis of available evidence allows some inferences to be made about the probable effect of regulatory reform and the MCA on motor carrier bankruptcies. This is precisely the purpose of this paper.

Before delving into the analysis of data, however, it is necessary to digress and clear up what appears to be some confusion about the nature and implications of bankruptcy. This is the subject of the following section. The remainder of the paper is organized into four sections presented in the following sequence: development of a testable hypothesis, followed by its testing, and the application of an alternative approach to measuring the effect of regulatory reform on motor carrier bankruptcies. The final section briefly summarizes the findings and draws the conclusions.

2. The Nature of Bankruptcy and Its Relation to Exits

Entry and exit occupy a prominent role in economic theory. The entry of firms into an industry is counted upon to eliminate excess profits, and the exit of firms is expected to reduce excess capacity and to weed out inefficient producers.

Several alternative ways are available for firms to exit from an industry, one of which is through bankruptcy. Although the term "bankruptcy" has acquired a highly negative connotation, it merely refers to the filing of a petition with a court, usually by the debtor, declaring that the firm is no longer able to pay its debts and asking for the bankruptcy court's "protection." The protection is against suits by individual creditors, the purpose of which is to conserve the available assets of the filing firm for payment of debts according to a known set of rules.

Actually, there are two bankruptcy processes: liquidation and reorganization. Liquidation involves dismantling the firm and selling its assets, while reorganization is a rehabilitation procedure which allows the firm to continue operating while making a financial settlement with its creditors. Most bankrupt firms attempt to reorganize first, and liquidate only if they are unsuccessful.

Consequently, the filing of bankruptcy does not necessarily mean exit of the firm from the industry. In fact, a number of carriers have continued to operate after declaring bankruptcy, and some were able to improve their financial status and operating efficiency through a reorganization. Neither is bankruptcy necessary for the reorganization

or exit of the firm. The financially ailing firm may reach a reorganization agreement with its creditors without a court's interference, or a firm may close part or all of its operations without declaring bankruptcy.

The number of bankruptcies, therefore, provides a poor measure of total exits. A broader measure of the financial health of the industry should also include carriers that reorganized following an agreement with their creditors and carriers that closed part or all of their operations without declaring bankruptcy. For this reason, the term "business failure," which includes all three categories of carriers, appears to be more appropriate than bankruptcy.

3. Development of a Testable Hypothesis

The claims that increased bankruptcies were caused by regulatory reform are based on the following argument. Administrative regulatory reform beginning in 1977 and the MCA by liberalizing entry restrictions caused a large influx of new firms into the industry, creating excess capacity. This excess capacity reduced profits which, in turn, caused an increase in bankruptcies and closures.

The motor carrier industry consists of a number of separate groups of specialized carriers, i.e., common and contract carriers, carriers of general or special commodities, carriers specializing in LTL and TL shipments, etc. It is unlikely that all groups of carriers were affected equally by regulatory reform. Thus, if regulatory reform was primarily responsible for the increase in bankruptcies, one should

observe more business failures in those segments of the motor carrier industry most heavily affected by reform.

The available evidence suggests that the new entrants into the motor carrier industry following the passage of the MCA went mainly into the sector of the industry specializing in transportation of TL shipments. Hargadine, et al. (1981) examined a sample of applications for initial authority and for extensions of existing authority selected from those filed between July 3, 1980, and December 1, 1980.

During this period, 6,514 applications were received by the Interstate Commerce Commission. Of these, only 623 sought initial operating authority (i.e., the applicant did not already hold permanent ICC operating authority), and 438 of these were for common carrier authority. In the random sample of 173 applications drawn from this population of 623, 23 percent were for general commodity authority and only 2 percent (three applications) were for regular-route authority normally required for the carrier specializing in LTL shipments. Extrapolating to the population of 438 applications for common carrier authority yields a point estimate of eight new carriers specializing in LTL shipments. Thus, the increase in competition due to new entry should have been more pronounced in the TL rather than in the LTL segment of the industry. But the business failures that have received wide publicity in the trade press were common carriers of general commodities specializing in LTL shipments.

Since one is not dealing with a random sample of failed carriers, it is possible that actually a greater proportion of carriers specializing in TL shipments have failed than the proportion of carriers specializing

in LTL shipments. This, however, is somewhat doubtful because a number of carriers that have closed part of their operations have chosen to close the LTL divisions but to continue to operate the TL divisions, claiming that the latter were still profitable. Thus, a somewhat different hypothesis to explain the failure of LTL carriers is needed.

The following appears to be plausible: Under regulation trucking firms were earning monopoly rents, the source of which (i.e., the necessary condition) was entry restriction. Part of the future stream of these rents was capitalized into the value of operating rights. Part of the current rent was captured by the union drivers in the form of higher driver wages and fringe benefits.¹ Regulatory reform and the MCA have eliminated the source of these rents. However, this was accomplished not by entry of new firms but by expansion of existing common carriers into new markets.²

Recognizing the fact that the source of rents has been eliminated, motor carriers wrote off the value of their certificates. But union drivers continued to earn rents. Thus, other things being equal, unionized firms could not survive in the industry in the long run in the new competitive environment unless wages were to decline to eliminate the rent. Thus, to be consistent with the above hypothesis, the evidence should reflect a higher probability of failure of unionized motor carriers with relatively large wage bills.

4. Test of the Hypothesis

Casual evidence appears to be consistent with the above hypothesis. The failed firms are believed to be large, unionized carriers specializing in LTL shipments which, as a rule, have a higher wage bill than the carriers specializing in TL shipments.³ Also, there has been pressure for real wages of union drivers to go down, resulting in renegotiations of union contracts and granting of concessions. Furthermore, the industry is moving to a lower real wage indirectly through the continuing replacement of employee-drivers with owner-drivers.

A sample of 30 failed firms was selected for a more formal test of the hypothesis. Part of the sample was drawn from an ATA list of bankrupt and out-of-business carriers. The other part includes carriers which were not on the ATA list but whose announcements of bankruptcies or closures of operations have received publicity in the trade press.⁴

All but one of the 30 firms are common carriers of general commodities. The single exception is the household goods carrier. It has been established that an overambitious merger or acquisition policy was the cause of bankruptcy in the case of three carriers (including the household goods carrier).⁵ Financial data for 1976 were not available for one carrier.⁶ These four carriers, therefore, were eliminated from the sample and another sample of 26 active (i.e., in-business) carriers was drawn from the ATA list of active carriers.⁷

The summary statistics for two samples, shown in Table 1, lead to the following tentative conclusions. As measured by the operating

ratio, the failed carriers were less profitable than the active carriers prior to regulatory reform, as early as 1976. Also, as measured by the ratio of wages and salaries to total revenue, they had a slightly larger wage bill than active carriers. The differences, however, are not statistically significant.

A linear discriminant function (LDF) was used for a more formal test of the hypothesis. The LDF appeared to be an appropriate tool because carriers in the two samples naturally fell into two distinct groups. Actually, two LDF's were estimated. Only two independent variables -- Wages and Salaries/Total Operating Revenue (WS) and Operating Ratio (OR) -- were used in the first LDF. In the second LDF two more independent variables -- LTL Revenue/Total Operating Revenue (LTLR) and Revenue/Ton (RTON) -- were added to account for possible differences in characteristics of the carriers. All values of the variables were for a pre-regulatory reform year -- 1976.

The results, summarized in Table 2, show that, as indicated by the standardized LDF coefficients, OR is the single most important variable in both functions, but only the second function is statistically significant at the one percent level. However, the poor performance of the WS variable and the relatively low value of the canonical correlation coefficient suggest that other variables excluded from the function are probably more important than WS in explaining business failures in the motor carrier industry. Thus, the available evidence is not consistent with the hypothesis that elimination of rents is the major cause of the increase in carrier failures.

5. An Alternative Approach

It is also possible to use a different approach to separate the effects of recession on motor carrier failures from those of the MCA. This approach involves a comparison of the change in business failures between those carriers affected and other carriers not affected by the MCA.

The time series of business failures in local trucking (SIC 4212) and intercity trucking (SIC 4213) since 1971 were supplied by Dun & Bradstreet, Inc. These are the most comprehensive statistics since, by definition, "failures" include all types of bankruptcy petitions as well as non-court actions involving loss to creditors. These data, shown in Table 3, allow the construction and comparison of business failure indices for the two SIC's.

Their past trends, shown in Figure 1, are not too surprising. The indices are correlated and move inversely with the business cycle. The firms in local trucking were not directly affected by the MCA. SIC 4213 includes interstate carriers that were and intrastate carriers that were not directly affected by the MCA. It is not possible to identify and separate the two types of carriers. Nevertheless, since interstate carriers are included, one should observe a more rapid increase in the index for SIC 4213 after passage of the MCA than in the index for SIC 4212 if the MCA was the primary cause of the increase in carrier failures.

This, however, does not appear to be the case. For the first six months of 1981, the number of business failures was equal to about

80 percent of business failures for the total year of 1980 in both local and intercity trucking. This suggests that it was the recession, and not regulatory reform, that was responsible for the observed increase in carrier failures.

It may be argued, however, that the failure rates would be a more appropriate measure of the increase in failures than an index based on absolute numbers. Unfortunately, the populations of local and intercity carriers needed to calculate the failure rates are not known. The use of absolute numbers, however, overstates rather than understates the increase in business failures in SIC 4213. There is no reason to expect that the number of local carriers increased significantly since the MCA. But it is well known that the number of interstate carriers has increased substantially during the same period. Thus, the denominator of the business failure rate for SIC 4213 must have increased, making the increase in the failure rate smaller as compared to SIC 4212. In other words, had the analysis been conducted in terms of failure rates rather than absolute numbers, the increase would have been smaller in intercity trucking relative to the increase in local trucking.

6. Summary and Conclusions

The purpose of this paper was to examine the available evidence for clues to the effect of regulatory reform, or the MCA in particular, on motor carrier failures. It employed two approaches to accomplish this task. The first one examined the differences in financial statistics

between samples of filed and active motor carriers. It was hypothesized that if regulatory reform was the primary cause of the increase in failures, motor carriers that fail should be large, unionized firms with relatively large wage bills. There is little difference in the Wages and Salaries/Total Operating Revenue ratio between failed and active motor carriers, and this variable does not appear to be important in explaining carrier failures.

The second approach examined the increase in the number of failures of local and intercity carriers since the MCA. Here it was hypothesized that since local carriers were not directly affected by the MCA, the increase in the number of their failures should be smaller than that of intercity carrier failures. The increase in the number of failures since the passage of the MCA, however, is about the same. The analysis, thus, suggests that other causes (such as recession) were probably more important than regulatory reform or the MCA.

This conclusion is clearly tentative. Concurrent recession makes it difficult to separate its effects from those of regulatory reform or the MCA. Furthermore, some exits of carriers should have been expected as a part of the industry's adjustment process to a more competitive environment. This adjustment process was probably speeded up by the recession.

Obviously, there are alternative explanations for the observed changes. It has been suggested, for example, that carriers specializing in TL shipments can more easily adjust to the cyclical decline in traffic than those specializing in LTL shipments. Therefore, one should observe

11

an increase in the number of failures of carriers specializing in LTL shipments during the recession. This explanation, while plausible, is not inconsistent with the conclusions reached in this paper since it argues that it was the recession, and not the MCA, that was responsible for the failure of these firms.

ADDENDUM

Since its completion in August, 1982 this paper was read by several reviewers who offered the following comments:

James C. Nelson, Professor of Economics Emeritus, Washington State Univ.

Professor Nelson believes that the commercial zones were widened by the ICC in the late 1970s. Thus, local carriers were affected by the regulatory reform and, therefore, could not serve as a control group. However, the commercial zones were not changed in the MCA. Therefore, local carriers were not affected and could serve as a control group in assessing effects of the MCA.

Rayburn M. Williams, Professor of Economics, University of Hawaii

Professor Williams made two comments. Clarify the point that writing off the value of certificates does not affect carrier costs only if these certificates were obtained through a grandfather clause. The costs are affected if the carrier obtained these rights by purchase or merger. This may explain financial difficulties of carriers that have grown rapidly through this route.

He also notes that the two independent variables in the LDF may be intercorrelated since WS and OR variables have the same denominator (i.e., TR) and WS accounts for a relatively large share of TC. Consequently, he suggested that I drop OR from the LDF. Consistency with the hypothesis that the regulatory reform is responsible for the failures requires a statistically significant WS coefficient.

Because of the focus on WS coefficient instead of LDF, I have used logic and OLS with the same data but dropping OR variable. The results obtained were as follows:^{1/}

$$\frac{p}{1-p} = -3.714 + 0.149 \text{ WS} - 0.030 \text{ LTLR} - 0.007 \text{ RTON} \quad (1)$$

(1.615) (2.137) (1.4351) (0.502)

$$D = -0.325 + 0.032 \text{ WS} - 0.002 \text{ LTLR} - 0.001 \text{ RTON} \quad (2)$$

(0.634) (2.244) (1.435) (0.486)

$$\bar{R}^2 = 0.063$$

where $\frac{p}{1-p}$ is the odds ratio that a carrier will go out of business, and D is the dummy variable taking the value of 1 if the carrier is out of business.

In both of the equations WS coefficient is not significant at the 5% level.

^{1/} Symptotic t-ratios for logic and t-ratios for OLS are shown in the parentheses.

Comments of Anonymous Referees. I had submitted the paper for a possible presentation at the TRB annual meetings. However, all three anonymous referees did not like the paper. Part of the problem was due to communication failure since two referees thought that the conclusions reached in the two sections of the paper were contradictory which is simply not the case.

One referee thought that the paper was too early, i.e., data was limited to 6 months after the MCA, and, therefore, was insufficient to support any conclusions. Most of the researchers, however, appear to agree that 1977 marks the beginning of the regulatory reform. Thus, sufficient time may have elapsed for some of the effects to be felt. It is also difficult to see how waiting another year or longer will make it easier to separate the effects of regulatory reform from those of the recession.

The same referee suggested that motor carriers were closing LTL divisions but continuing to operate TL divisions were doing to in order to avoid ERISA withdrawal liabilities. I have not pursued this explanation. The comments from the third referee suggests his failure to understand what was going on.

Table 1

Summary Statistics: Failed and Active Motor Carriers

<u>Operating Ratio (1976)</u>	<u>Mean</u>	<u>S.D.</u>
Failed Carriers	98.5	2.28
Active Carriers	94.3	4.27
Industry Average	95.2	N.A.
<u>Wages and Salaries/Total Operating Revenue</u>		
Failed Carriers	41.85	6.33
Active Carriers	38.95	5.38
Industry Average	39.00	N.A.

Source: Tables A-1, A-2 and A-3

Table 2

Linear Discriminant Function Results

<u>Variable</u>	<u>LDF Coefficients</u>	<u>Standardized LDF Coefficients</u>
<u>Function #1:</u>		
OR	0.283	0.969
WS	0.016	0.093
Constant	-27.922	--

Chi-square = 17.414

D.F. = 2

Canonical Corr. Coeff. = 0.547

Function #2:

OR	0.261	0.893
WS	0.046	0.272
LTLR	- 0.013	- 0.278
RTON	- 0.002	- 0.036
Constant	-26.149	--

Chi-square = 17.890

D.F. = 4

Canonical Corr. Coeff. = 0.558

Table 3

Business Failures in the Trucking Industry, 1971-80

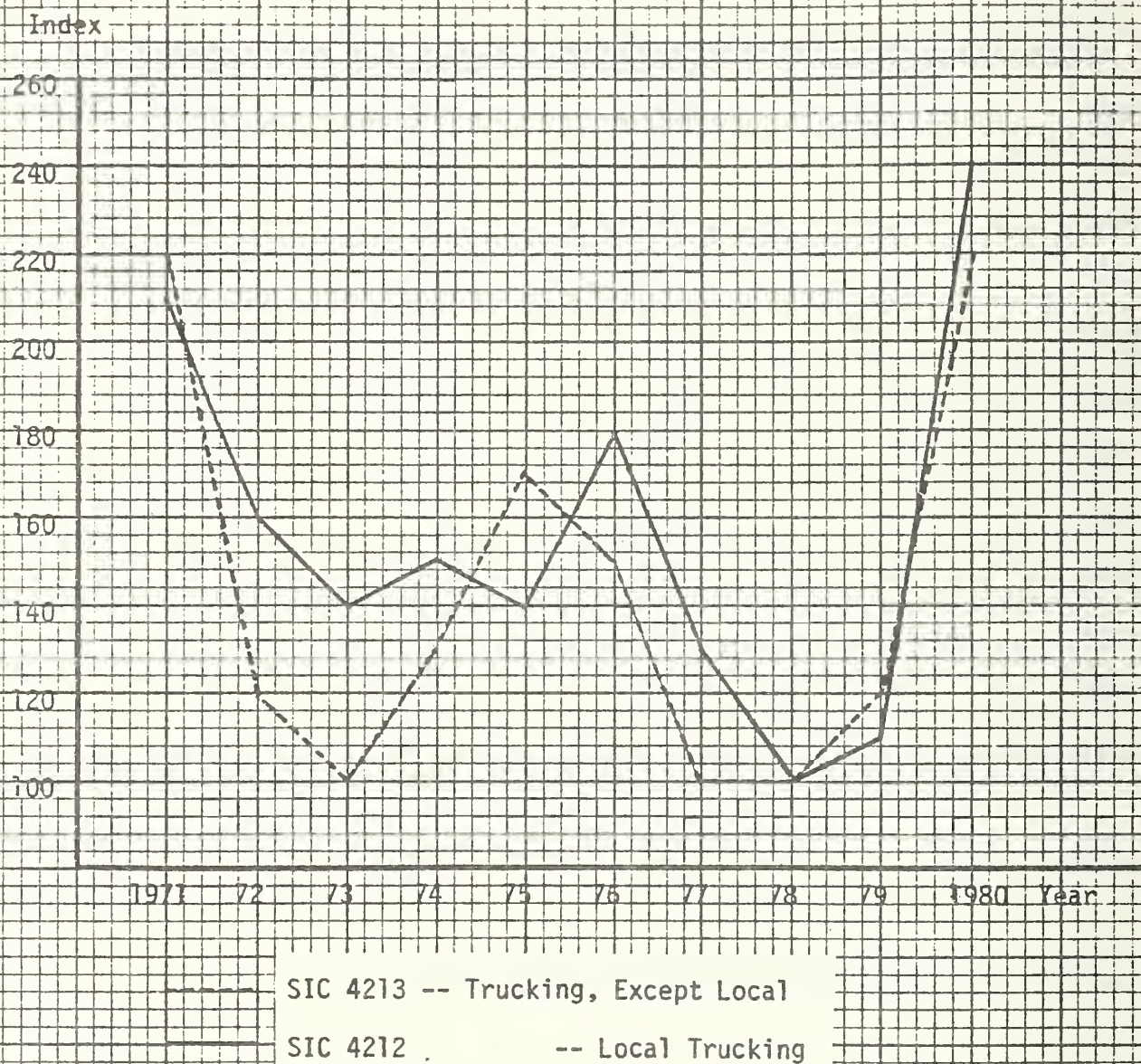
<u>Year</u>	<u>SIC 4212</u>		<u>SIC 4213</u>	
	<u>Number of Failures</u>	<u>Failure Index*</u>	<u>Number of Failures</u>	<u>Failure Index*</u>
1971	208	208	122	218
1972	143	143	68	121
1973	135	135	55	98
1974	144	144	74	132
1975	127	127	93	166
1976	180	180	82	146
1977	119	119	57	102
1978	100	100	56	100
1979	104	104	67	120
1980	237	237	125	223
1981 (6 mos.)	189	---	99	---

*1978 = 100.

Source: Dun & Bradstreet, Business Economics Division.

FIGURE 1

INDICES OF BUSINESS FAILURES IN THE TRUCKING INDUSTRY, 1971-1980



FOOTNOTES

1. For a further discussion, see More (1978).
2. Indeed, according to Hargadine, et al. (1981), cited above, more than 80 percent of applications received by the ICC after passage of the MCA were for extensions of existing common carrier authorities.
3. For example, the following relation was found for the two samples of motor carriers used to test the hypothesis:

$$\begin{array}{lll}
 WS = 31.951 + 0.182 \text{ LTLR} - 0.060 \text{ RTON} & R^2 = 0.611 \\
 \quad \quad \quad (0.034) \quad \quad \quad (0.030) & F = 14.621
 \end{array}$$

where WS = Wages and Salaries/Total Operating Revenue in 1976;
 LTLR = Revenue from LTL Shipments in 1976;
 RTON = Revenue per Ton Earned in 1976.

4. The list of selected carriers is shown in the Appendix.
5. Wilson Freight Company, Spector-Red Ball Freight System, and Fernstrom Storage and Van Company.
6. Monahan Transportation Co., Inc.
7. The list of selected carriers is also shown in the Appendix.

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Trinc Transportation Consultants, Trinc's Blue Book of the Trucking Industry, Washington, D.C., published annually.

APPENDIX

SELECTED STATISTICS, SAMPLES OF FAILED AND ACTIVE MOTOR CARRIERS

Table A-1

Operating Ratios, Sample of Failed Class I and II Motor Carriers, 1976-80

<u>No.</u>	<u>Carrier</u>	<u>1976</u>	<u>1977</u>	<u>1978</u>	<u>1979</u>	<u>1980</u>
1.	Admitral Merchants Mtr. Frt. (MN)	98.8	97.8	98.6	102.6	106.8
2.	Arrow Transportation Co. (RI)	101.5	98.5	102.1	106.9	N.L.
3.	Auclair Transportation, Inc. (NH)	97.0	95.9	96.5	99.0	102.7
4.	Chippewa Motor Frt., Inc. (SD)	99.5	98.0	99.9	N.L.	N.L.
5.	Cole, Jack-Dixie Highway Co. (MN)	105.8	96.1	102.0	106.1	111.1
6.	Cooper Jarrett, Inc. (NJ)	96.0	98.7	101.4	104.6	102.9
7.	Courier-Newsom Express, Inc. (IN)	96.8	98.4	91.5	100.5	101.0
8.	Denver-Midwest Mtr. Frt. (CO)	96.5	94.6	94.7	N.L.	102.6
9.	Eazor Express, Inc. (PA)	95.5	96.1	96.9	100.4	103.4
10.	Fernstrom Stge. & Van Co. (IL)	108.5	112.4	110.4	112.7	105.0
11.	Feuer Transportation, Inc. (NY)	97.0	103.2	101.0	N.L.	104.9
12.	I R C & D Motor Freight, Inc. (IN)	97.7	99.7	100.6	100.7	102.7
13.	Inland Express, Inc. (NY)	98.5	99.6	98.8	101.9	103.3
14.	Jersey Seaboard Lines, Inc. (NJ)	99.0	99.1	104.0	95.0	N.L.
15.	Johnson Motor Lines, Inc. (NC)	97.5	97.8	98.3	102.2	N.L.
16.	Law Trucking Company (RI)	102.4	94.0	101.4	N.L.	N.L.
17.	Lime City Trucking Co., Inc. (IN)	98.4	100.9	99.6	109.6	N.L.
18.	Long Transportation Co. (MI)	99.5	99.6	98.9	99.8	103.7
19.	Marathon Freight Lines, Inc. (NJ)	97.7	93.6	100.0	105.9	N.L.
20.	Mid-American Lines, Inc. (MO)	98.8	99.0	99.0	100.5	101.0
21.	Monahan Transportation Co., Inc. (RI)	N.L.	97.4	98.7	109.4	N.L.
22.	Motor Transport Co. (WI)	96.7	97.6	98.1	98.9	N.L.
23.	Over-Nite Motor Service, Inc. (IL)	98.8	99.0	95.6	102.0	N.L.
24.	Spector-Red Ball Freight System (IL)	98.1	96.6	95.9	97.8	99.5
25.	T.I.M.E.-DC, Inc. (TX)	98.8	97.6	95.6	97.3	98.3
26.	Transport Motor Express, Inc. (IN)	97.5	99.2	100.7	100.1	N.L.
27.	Turner Trucking Co., Inc. (IN)	96.8	97.1	95.1	96.7	95.4
28.	Wilson Freight Company (OH)	93.9	96.9	101.5	103.9	N.L.
29.	Witte Transportation Co. (MN)	97.0	97.3	100.8	N.L.	N.L.
30.	Wooster Express, Inc. (PA)	101.9	94.4	91.4	91.0	N.L.
Industry Average		95.2	94.5	94.7	96.4	95.7

Table A-2

Selected Statistics, Sample of Failed Class I and II Motor Carriers, 1976

<u>No.</u>	<u>Carrier</u>	<u>WS</u>	<u>LTLR</u>	<u>RTON</u>
1.	Admitral Merchants Mtr. Frt. (MN)	34.8	54.9	43.87
2.	Arrow Transportation Co. (RI)	42.6	56.2	37.35
3.	Auclair Transportation, Inc. (NH)	45.7	73.1	30.27
4.	Chippewa Motor Frt., Inc. (SD)	41.4	62.6	41.25
5.	Cole, Jack-Dixie Highway Co. (MN)	40.9	54.1	56.00
6.	Cooper Jarrett, Inc. (NJ)	37.8	65.0	78.91
7.	Courier-Newsom Express, Inc. (IN)	38.9	36.0	28.64
8.	Denver-Midwest Mtr. Frt. (CO)	30.9	66.4	63.43
9.	Eazor Express, Inc. (PA)	37.3	47.9	47.28
10.	Fernstrom Stge. & Van Co. (IL)	44.5*	N.A.	N.A.
11.	Feuer Transportation, Inc. (NY)	49.6	84.2	58.88
12.	I R C & D Motor Freight, Inc. (IN)	46.3	65.7	24.30
13.	Inland Express, Inc. (NY)	41.2	75.4	69.98
14.	Jersey Seaboard Lines, Inc. (NJ)	48.7	74.4	46.39
15.	Johnson Motor Lines, Inc. (NC)	39.4	58.8	66.45
16.	Law Trucking Company (RI)	49.9	82.5	35.78
17.	Lime City Trucking Co., Inc. (IN)	46.6	70.5	31.83
18.	Long Transportation Co. (MI)	23.1	6.7	27.51
19.	Marathon Freight Lines, Inc. (NJ)	41.6	76.3	46.63
20.	Mid-American Lines, Inc. (MO)	37.8	75.5	17.97
21.	Monahan Transportation Co., Inc. (RI)	N.A.	N.A.	N.A.
22.	Motor Transport Co. (WI)	51.6	84.1	33.46
23.	Over-Nite Motor Service, Inc. (IL)	48.0	69.0	24.38
24.	Spector-Red Ball Freight System (IL)	40.3	49.2	63.80
25.	T.I.M.E.-DC, Inc. (TX)	40.0	56.3	112.70
26.	Transport Motor Express, Inc. (IN)	44.0	60.4	37.31
27.	Turner Trucking Co., Inc. (IN)	42.2	0	15.74
28.	Wilson Freight Company (OH)	39.3	64.4	70.43
29.	Witte Transportation Co. (MN)	40.0	84.5	57.34
30.	Wooster Express, Inc. (PA)	48.0	64.6	38.87

Industry Average 39.0
Sample Average 41.74
Standard Deviation 6.11

Table A-3

Selected Statistics, Sample of Active Carriers, 1976

<u>No.</u>	<u>Carrier</u>	<u>WS</u>	<u>LTLR</u>	<u>RTON</u>	<u>OR</u>
1.	APA Transport Corp. (NJ)	33.8	93.4	96.24	78.9
2.	Arrow Freightways, Inc. (NM)	22.6	0	17.66	89.3
3.	Blue Arrow-Douglas, Inc. (MI)	37.1	58.2	30.36	90.2
4.	Bournes Transit, Inc. (MA)	44.2	87.0	29.04	97.1
5.	Bowman Transportation, Inc. (GA)	34.4	51.3	48.72	92.4
6.	Carolina Frt. Carriers (NC)	39.5	63.5	72.47	96.9
7.	Churchill Truck Lns., Inc. (MO)	44.5	64.5	50.23	94.9
8.	Coles Express (ME)	34.4	66.1	45.45	90.5
9.	Dean Truck Line, Inc. (MS)	40.0	77.8	40.74	98.0
10.	East Texas Mtr.Frt.Lns.,Inc. (TX)	37.6	62.2	89.80	93.0
11.	Friedman's Express, Inc. (PA)	45.2	83.2	64.58	101.1
12.	Garrett Frt. Lns., Inc. (ID)	44.7	71.1	76.08	94.6
13.	Hays Marvin Lines, Inc. (TN)	33.7	71.0	41.86	95.4
14.	Holmes Transportation, Inc. (MA)	42.2	78.7	53.20	93.9
15.	Kains Motor Serv. Corp. (IN)	46.1	82.1	39.82	96.2
16.	Milne Truck Lines, Inc. (UT)	41.6	74.6	65.53	91.6
17.	Oak Harbor Frt. Lines (WA)	45.3	47.2	44.36	92.4
18.	Oneida Mtr. Frt., Inc. (NJ)	38.4	48.2	45.50	93.0
19.	Rupp-Southn.Tier Frt.Lns.,Inc.(NY)	44.1	91.0	64.89	98.3
20.	Ryder Truck Lines, Inc. (FL)	34.7	52.8	67.84	92.2
21.	Salt Creek Frtways (WY)	40.2	82.5	66.84	94.9
22.	Schuster Express, Inc. (CT)	37.4	68.4	52.69	96.2
23.	Slater MC, Inc. (IL)	32.1	5.0	13.72	97.3
24.	South Bend Frt. Lines (IN)	37.2	61.1	20.29	99.2
25.	Suburban Mtr. Frt., Inc. (OH)	43.0	63.8	43.18	96.7
26.	Transcon Lines (CA)	38.8	60.6	135.27	93.8

*In 1981 edition, listed as carrier of building materials.

Trinc Transportation Consultants (1977).

EFFECT OF REGULATORY REFORM ON MOTOR CARRIER QUALITY OF SERVICE

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Abstract

The purpose of this study is to assess the effects of administrative regulatory reform and the Motor Carrier Act of 1980 on the quality of service supplied by for-hire motor carriers in the U.S. The study uses a "before-and-after" format with shipper quality assessments supplied by the Industrial Shipper Survey providing the pre-regulatory reform measurements and the same assessment supplied by the Follow-Up Survey providing the post-regulatory reform measurements. Lack of significant differences between these assessments suggest no deterioration in the quality of services. The findings, however, indicate a significant increase in the number of quality and price options available to shippers.

Introduction

In the United States, the trucking industry was brought under regulation by the Motor Carrier Act of 1935. For over forty years that followed entry into the industry was restricted by requiring anyone who wished to offer trucking services to obtain a "certificate of public convenience and necessity" by demonstrating that there was a need for additional services. The burden of proof was on the applicant and any interested party could protest the application. Furthermore, collectively determined freight rates as well as points, routes and gateways that an individual firm could serve or use were tightly regulated by the Interstate Commerce Commission.

Things began to change in 1977 with the appointment of Daniel O'Neal to the Chairmanship. The Commission began a series of administrative reforms which continued under O'Neal successor, Darius Gaskins, and which eventually led to passage of the Motor Carrier Act of 1980, hereafter referred to as the MCA.

The MCA eased entry into the industry by shifting the burden of proof from the potential entrant to the Commission and the protesters, gave carriers freedom to raise or lower rates by as much as 10 percent, provided for removal of operating restrictions found in many motor carrier certificates as well as for some restrictions on collective rate-making in the future.

The purpose of this paper is to estimate effects of this regulatory reform on the quality of services supplied by for-hire motor carriers. One would expect the quality of service to decrease.

This expectation is based on results of several studies. White (1972), for example, in addition to a variable for basic output, included quality as a separate variable in the simple model of competitive industry with and without regulation. By comparing the equilibrium outcomes he concluded that a regulated competitive industry would offer more quality per unit of basic output than an unregulated competitive industry and that regulation induces a uniformity of quality offerings while an unregulated industry would offer a variety of qualities.

Douglas and Miller (1974) reached a similar conclusion. According to this study of airline regulation the CAB by setting the above competitive rates and by restricting entry into the industry allowed airlines to earn "monopoly rents." But some forms of competition, i.e., frequency of service, were not restricted. Airlines, therefore, had an incentive to dissipate these rents by increasing flight frequencies which, in turn, required an increase in capacity and which resulted in higher average costs. Thus, regulation resulted in higher quality of service and higher costs.^{1/}

The regulatory reform described above could hardly qualify as "deregulation." Nevertheless, the direction of change in the quality of service should be the same, i.e., one should expect the overall quality of service to decrease but for more variety of price and service option to become available to the shippers.

This paper's four sections are presented in the following sequence: A discussion of the conceptual framework available for estimating impacts of changes in public policies is following by a description of procedures used and the results obtained. The final section contains a brief summary and conclusions.

Conceptual Framework

It may be helpful to view an effort to measure effects of a policy change as an "experiment" with the policy change as a "treatment." In each case we are interested in measuring effects "caused" by the treatment. But, of course, there are important differences. A real experiment can be replicated and subjects can be assigned to different groups at random. This is seldom possible in the case of a policy change. Thus, here we have what is known as a "quasi-experiment."

The main advantage of looking at the measurement effort in this particular way is the accumulated knowledge about the strengths and weaknesses of various experimental designs. Not as much progress has been made, but some effort has been devoted to quasi-experimental designs. Campbell and Stanley (1963) analyzed twelve research designs that have been or could be used in education research. Six of these were quasi-experimental designs. Charles River Associates (1972) examined the applicability of these designs for measuring the effects of transportation investments on land values.

For measuring effects of policy changes, probably the most commonly used is a "one-group-pretest-posttest" design which may be diagrammed as follows:

$$O_1 \quad X \quad O_2$$

where O_1 is a set of measurements at t_1 , X is the treatment, and O_2 is a set of measurements at t_2 . The difference, $O_2 - O_1$, is assumed to be caused by X . This is the design underlying a typical "before-and-after study."^{2/}

Campbell and Stanley (1963) considered the susceptibility of this and each of their other designs to twelve factors that "threaten" the validity of the results. They divided these factors into those threatening the "internal" validity and those threatening "external" validity. The "internal validity" pertains to the validity of the conclusion that the experimental treatment has indeed caused the observed effect, and the "external validity" to the validity of generalization from the results of a particular experiment to the population one is interested in. That is, the factors that threaten internal validity could by themselves produce changes which might be mistaken for the results of X. Thus, they are rival hypotheses explaining the observed difference between O_1 and O_2 . There is also a possibility that the effects validly demonstrated in an experiment hold only for that unique population from which the experimental and control groups were selected. These are the factors threatening external validity. The list of factors compiled by Campbell and Stanley is shown in Table 1. Not all of the listed factors are equally important in all situations and some are clearly more pertinent to research in education.

The One-group-pretest-posttest design is susceptible to almost all threats to internal and external validity. The usual way to overcome these threats is to add a control group, changing the design to the "pretest-posttest-control-group" design, which can be diagrammed as follows:

$$O_1 \quad X \quad O_2$$

$$O_3 \quad O_4$$

where 0_3 and 0_4 are measurements on the control groups.^{3/} In this design the difference between 0_2-0_1 and 0_4-0_3 is attributed to X.

The control group designs are clearly superior to the one-group designs. If the samples for treatment and control groups were selected at random from the same population (i.e., if it is a true experiment), all seven rival hypotheses are controlled because any factor that might have produced an 0_2-0_1 difference would also produce an 0_4-0_3 difference. The design is somewhat less desirable if samples are not allocated randomly to treatment and control groups (i.e., if it is a quasi-experiment); one threat to internal validity (selection) is no longer controlled.

Clearly it would have been desirable to use the design with a control group. However, the selection of an appropriate control group, which is rather difficult in any situation, is more likely to be feasible if the measurement effort is being planned before the change in policy is made rather than ex-post. In the case of the quality of service, for example, it would have been a reasonably simple task to obtain comparable quality of service measures for intrastate motor carriers. Since these carriers were not directly affected by regulatory reform, these measures could have served as a control. It still would have been necessary to test the hypothesis that the measures pertaining to intra- and interstate carrier service were drawn from the same population. A positive finding would provide the basis for assuming that the selected control group is a valid one. Unfortunately, ex-post it is not possible to generate these measures for the pre-regulatory reform period.

In short, the ex-post measurement of the impact of regulatory

reform on motor carrier quality of service is pretty much limited to a before-and-after framework which, in turn, is based on a one-group-pretest-posttest quasi-experimental design. This design provides no control over the effects of several factors threatening the validity of the results, the two of which--exogenous events and instrumentation--may be particularly important. While not much can be done to control these threats as a part of the design, in certain situations it is possible to provide for tests of these rival hypotheses and to adjust the estimates accordingly as a separate task.

Procedure

The pre-regulatory reform measurements were supplied by the Industrial Shipper Survey, hereafter referred to as ISS, conducted in 1973-1974.^{4/} The post-regulatory reform measures were supplied by the Follow-Up Survey of Industrial Shippers, hereafter referred to as FUS, conducted in 1982.^{5/}

In both surveys each respondent was requested to supply two types of assessments: an overall assessment of the quality of service being provided, and an assessment of each specific quality of service attribute. To elicit a respondent's overall evaluation, each was requested to appraise the quality of service on a five-point scale (excellent, quite good, adequate, minimally acceptable, and unsatisfactory).

The overall assessment is a result of the respondent's subjective evaluation and weighing of carrier performance with respect to several quality of service attributes. It may be preferable to examine changes in evaluations of specific performance measures.

In the ISS as well as the FUS, the four following specific measures of performance were used:

- (1) On-time pickup
- (2) On-time delivery
- (3) Loss, short and damage
- (4) Equipment availability

For each measure the respondent was requested to express his "positive" experience in percentage terms, e.g., percentage of shipments that arrived without loss, short or damage. Furthermore, each respondent was asked to evaluate the performance level qualitatively. That is, if, for example, a statement was made that 90 percent of the time shipments were picked up on time, the respondent was then asked to stipulate whether that figure (i.e., 90 percent) was considered excellent, quite good, adequate, minimally acceptable or unsatisfactory.

The respondents' evaluations of service attributes are qualitative, i.e., they are in terms that do not have standardized meanings. However, the specified performance level in the percentage terms in conjunction with the performance assessment in qualitative terms allowed development of "definitions" to be attached to these terms. That is, the mean of all responses for each assessment level "defined" each term. For example, in the ISS the mean percentage for on-time pickup service by motor carriers considered excellent was 96.9 percent. For reasons to be explained below, these definitions could potentially be very important.

It is not clear whether shipper assessments of overall quality of service would take into account the number of available price

and quality options. Thus, the survey instrument included a specific question asking respondents to list all new price and service options that became available since July 1, 1980.

As was pointed out above, the validity of before-and-after comparisons is susceptible to a variety of threats. One of these is the exogenous event--recession--the inception of which coincided with passage of the MCA. Although little is known about the effect of business cycles on the quality of service, one may speculate that the quality of service should increase in recessionary periods as carriers compete for the decreased quantity of available traffic. However, not all performance measures should be affected equally. A priori one would expect "equipment availability" to be affected the most and "loss, short and damage" the least. Thus, the differences in responses to the equipment availability and the loss, short and damage questions provide a partial test of this rival hypothesis.

There are also several potential threats due to instrumentation. First, for the FUS, it would have been preferable to resurvey the respondents to the original survey. However, the list of respondents is no longer available. Thus, as the next best alternative, the last stage of the sampling procedure used in the ISS was duplicated, i.e., a random sample of shippers was drawn from the same list of manufacturing establishments located in the same SMSA's selected in the ISS and the sample was distributed among SMSA's in the same proportions as in the ISS.

Because it was not possible to resurvey the same respondents, the differences in assessments in the FUS may be due to a different set of "definitions" held by the current sample of respondents and

not to changes in service quality. If that were the case, however, one could construct a Laspeyres index of service quality using the definitions obtained in the ISS as weights. Thus, it would be possible to estimate what the assessments would have been had the definitions remained constant.

The second and third instrumentation threats are due to changes in the questionnaire. In the ISS no distinction was made between private and for-hire motor carriers. Since it is commonly assumed that private motor carriers supply a higher quality of service (in fact, it has been alleged that this is the motivation of companies to engage in private trucking), the combined assessment may be a biased measure of the quality of service provided by for-hire motor carriers. Furthermore, in the ISS it was assumed that respondents evaluated each mode independently. However, it is possible that the quality of service provided by one mode served as a benchmark and others were evaluated against it.

In order to test for a possible bias but to retain comparability to information collected in the ISS, the total sample of the FUS was divided into two subsamples. The respondents in the first subsample, hereafter referred to FUSSA, were requested to supply the same information as respondents to the ISS. The respondents in the second subsample, hereafter referred to as FUSSEB, were requested to assess the quality of service of for-hire motor carriers only, and all references to other modes were eliminated.

Thus, the responses in the two subsamples provides a partial test of the rival hypothesis that it is the change in survey instrument that is responsible for the observed difference in the quality of service assessments.

The fourth threat pertains to the differences in survey methods employed. The ISS used a combination of mail and personal interview technique. Because of budget constraints, the FUS had to use mail rather than personal interviews. For the same budgetary reason it was not possible to test for the differences in responses due to change in the survey methods.

Results

The overall quality of service assessment responses supplied by the ISS and FUSSA, summarized in Table 2, suggest that contrary to expectations there has been no deterioration in the quality of service provided by motor carriers. The differences between FUSSA and FUSSB responses suggest a possible instrumentation bias, however, these differences are not statistically significant at the 5 percent level (i.e., the calculated chi-square is 6.13).

The conclusion that there has been little, if any, change in quality of service is further substantiated by the lack of any significant differences in shipper assessments of specific quality of service attributes. No changes are detectable in the means of specific quality of service performance responses (Table 3) and only a slight improvement in shipper assessment of specific quality of service attributes (Table 4). Again, the differences between FUSSA and FUSSB responses suggest a possible instrumentation bias but none of the differences are statistically significant at the 5 percent level. Furthermore, the "definitions," i.e., the qualitative assessments that shippers have assigned to various performance levels have remained remarkably stable (Table 5).

In sharp contrast to these results and consistent with a priori expectations was a significant increase in the number of price and service options available to shippers. The respondents to the FUS reported the following new price and service options which became available since July 1, 1980:

	<u>Frequency</u>
Guaranteed delivery time	91
Discount for pickup of multiple shipments.	142
Released rates	40
Discounts for giving the carrier a certain volume of freight per month or per year.	104
New LTL service (if the carrier offered only TL service previously)	38
New TL service (if the carrier offered only LTL service before)	23
Other	27
No new price or service options	28

Summary and Conclusion

The purpose of this study was to measure the effects of regulatory reform on the quality of service supplied by for-hire motor carriers. The study utilized a "before-and-after" format using the information supplied by the ISS conducted in 1973-4 for the pre-regulatory reform measurements and the information supplied by the FUS conducted in 1982 for the post-regulatory reform measurements.

The lack of significant differences in the overall quality of service assessments or in the assessments of specific quality of service attributes suggests that regulatory reform had little effect

on the quality of service supplied by motor carriers. There is certainly no evidence of any deterioration in service quality. However, as expected, there has been a significant increase in number of price and service options that have become available to shippers.

The differences in ISS, FUSSA and FUSSB responses are not consistent with the two rival hypotheses--recession and instrumentation. Although only partial tests of these hypotheses were possible. Therefore, this conclusion is rather tentative.

Several possible explanations could be offered for the lack of quality deterioration. First of all, the regulatory reform is hardly a "deregulation." The regulatory change may have been too small to produce a detectable effect on the quality of service. Second, insufficient time may have elapsed for regulatory effects to be felt. Third, there may have been little opportunity for nonprice competition among regulated carrier prior to the regulatory reform. Therefore, the deterioration in the quality of service should not have been expected.

Footnotes

1. A number of other studies of airline regulation that have reached similar conclusions are cited in Douglas and Miller (1974).
2. A variant of this design is to use more than one set of "pre" and "post" measurements. In fact, one could have any number of periodic measurements with an experimental change introduced somewhere, preferably in the middle of the series. This gives us a "time series" experimental design which can be diagrammed as:

$$0_1 \quad 0_2 \quad 0_3 \quad 0_4 \quad x \quad 0_5 \quad 0_6 \quad 0_7 \quad 0_8$$

The effect of X is inferred from the significant change in the time series (e.g., change in slope or intercept) which coincides with X.

3. One or more control groups can also be added to the time series design and their time series compared with that of the sample affected by the treatment.
4. A detailed description of the ISS and the results obtained are available in Jones (1975).
5. The sampling designs of the ISS and the FUS are described in the Appendix. The sampling instruments are available from the author upon request.

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Table 1

Factors Jeopardizing the Internal and External Validity of Experiments

Internal Validity

1. Exogenous Influences^{1/}--Specific events occurring contemporaneously with the experimental treatment.
2. Maturation--Processes operating as a function of time (not specific to the particular events).
3. Testing--The effect of taking a test upon scores of a second test.
4. Instrumentation--Changes in the calibration of measuring instrument or changes in the observers or scorers used.
5. Statistical Regression--An effect of sampling on the basis of extreme or unusual behavior.
6. Selection--The introduction of biases by the criteria on which groups for comparison are selected.
7. Sample Mortality--Differential loss of respondents from control and treatment groups.
8. Interactions--Joint effects of two or more of the above factors.

External Validity

9. Reactive Testing Effect--The sensitizing effect of testing prior to treatment resulting in the pretest sample reacting to the change differently from a sample which was not pretested.
10. Interaction--Interaction between selection biases and the effects of the treatment.
11. Reactive Effects of Experimental Arrangements--Artificiality of experimental setting which precudes generalization about the effect of the experimental variable upon person being exposed to it in nonexperimental setting.
12. Multiple Treatment Interference--"likely to occur whenever multiple treatments are applied to the same respondents, because the effects of prior treatments are not usually erasable."^{2/}

^{1/} Campbell and Stanley use the term "history."^{2/} Campbell and Stanley (1963).

Source: Campbell and Stanley (1963) and Charles River Associates (1972).

Table 2
Shipper Assessments of the Overall Quality of Service by Source

Source	Excellent	Quite Good	Adequate	Minimally Acceptable	Unsatisfactory	Total
ISS	20 (10.36%)	109 (56.48)	59 (30.57)	4 (2.07)	1 (0.52)	193
FUSSA	12 (10.81)	72 (64.86)	26 (23.42)	1 (0.90)	0 (--)	111
FUSSB	27 (22.69)	71 (59.66)	20 (16.81)	1 (0.84)	0 (--)	119

Table 3

Performance of Motor Carriers by Specific Quality of Service Factors

<u>Performance Factor</u>	<u>Source</u>	<u>Mean Percentage Response</u>	<u>Number of Responses</u>
On-time pickup	ISS	89	189
	FUSSA	87	109
	FUSSB	85	117
<hr/>			
On-time delivery	ISS	84	177
	FUSSA	84	106
	FUSSB	88	112
<hr/>			
Arrivals without loss, short or damage	ISS	94	185
	FUSSA	93	107
	FUSSB	95	115
<hr/>			
Specified equipment availability	ISS	90	164
	FUSSA	93	96
	FUSSB	93	102

Table 4
Qualitative Assessments of Specific Performance Factors

Performance Factor	Source	Excellent	Quite Good	Adequate	Acceptable	Unsatisfactory	Number of Responses
On-time pickup	ISS	51 (27%)	79 (42%)	47 (25%)	9 (5%)	3 (2%)	189
	FUSSA	24 (23%)	61 (58%)	18 (17%)	2 (2%)	1 (1%)	106
	FUSSB	36 (31%)	58 (50%)	17 (15%)	4 (3%)	1 (1%)	116
On-time delivery	ISS	26 (15%)	65 (37%)	69 (39%)	12 (7%)	4 (2%)	176
	FUSSA	16 (16%)	45 (44%)	37 (36%)	3 (3%)	2 (2%)	103
	FUSSB	21 (19%)	54 (48%)	30 (27%)	5 (4%)	2 (2%)	112
Arrivals without loss, short or damage	ISS	58 (31%)	82 (44%)	33 (18%)	9 (5%)	3 (2%)	185
	FUSSA	31 (30%)	46 (44%)	21 (20%)	4 (4%)	2 (2%)	104
	FUSSB	46 (41%)	48 (42%)	17 (15%)	1 (1%)	1 (1%)	113
Specified equipment availability	ISS	52 (31%)	58 (35%)	41 (25%)	9 (5%)	4 (2%)	164
	FUSSA	34 (36%)	40 (43%)	19 (20%)	1 (1%)	0 (0%)	94
	FUSSB	39 (39%)	42 (42%)	18 (18%)	1 (1%)	0 (0%)	100

Table 5

Mean Percentage of Service Levels by Performance Measures

Performance Measure	Source	Service Levels (in %)			
		Excellent	Quite Good	Adequate	Acceptable
Pickup	ISS	96.90	92.22	83.35	60.00
	FUSSA	96.96	89.28	81.35	45.00
	FUSSB	95.28	91.10	83.41	52.50
Delivery	ISS	96.70	88.62	81.63	61.25
	FUSSA	94.39	89.82	75.00	75.00
	FUSSB	94.71	89.15	81.10	90.00
Loss, Short & Damage	ISS	98.14	94.38	91.70	88.00
	FUSSA	97.42	94.43	83.62	89.00
	FUSSB	97.78	94.58	88.06	98.00
Equipment Availability	ISS	98.62	93.11	83.52	71.25
	FUSSA	98.59	93.00	84.89	80.00
	FUSSB	95.49	92.90	86.83	60.00

58.33
50.00
60.00
47.50
60.00
62.50
76.67
85.00
90.00
58.75

APPENDIX

SAMPLING PROCEDURES

The ISS's data-gathering process consisted of the mailing of a questionnaire followed by a personal interview at the manufacturing facility during which time the questionnaire was retrieved. To facilitate the field investigation and in so doing to keep the cost within bounds, the population was defined to include those manufacturing facilities at which at least 100 people were employed and which were situated within Standard Metropolitan Statistical Areas (SMSA's).

The sampling technique employed in the study was a stratified, two-stage area (cluster) sample. The initial stratification involved the use of Census regions to divide the country, i.e., Northeast, North Central, South, and West. The SMSA's located within the aforementioned Census regions were then separated into two groups based upon 1970 population figures: (1) those with populations of one million or more, and (2) those with populations of less than one million but more than 200,000.

The second dimension of the sampling procedure was a two-stage area sample. First, from the 149 SMSA's represented in the eight strata (4 Census regions x 2 types of SMSA's), SMSA's were selected at random in such a manner that the number of respondents in each Census region (by size of SMSA) approximated the distribution of plants (manufacturing establishments) in the respective population segments. The SMSA's selected using this process are shown in Table A-1.

Table A-1

SMSA's Included in the Industrial Shipper Survey by Census RegionNortheast

Boston
Paterson-Clifton-Passaic
Pittsburgh
Springfield, Mass.

South

Atlanta
Memphis
San Antonio

North Central

Chicago
Kansas City
Milwaukee
Saginaw

West

San Bernardino-Riverside
San Francisco
Tacoma

3

The second stage of the area sample involved the random selection of shippers (manufacturing facilities) from within the previously designated SMSA's. The selection of the shipper was made from a Dun & Bradstreet listing of manufacturing firms by SMSA and by employment level (100 minimum). Table A-2 indicates the degree to which the sample used in the ISS duplicated the distribution of the manufacturing establishments in the populations.

For budgetary reasons the sample size was 200 establishments. Because the combination mail-personal interview technique was used, the ISS achieved a 97.5 percent response rate.

For the follow-up survey it would have been preferable to resurvey the respondents to the original survey. However, the list of respondents is not available. As the next best alternative, the last stage of the sampling procedure used in the ISS was duplicated, i.e., a random sample of shippers drawn from a Dun & Bradstreet listing of manufacturing establishments located in SMSA's selected in the original survey and with the sample distributed among SMSA's as in the ISS.

Because of the time and resource constraints, the FUS used mail rather than the personal interview method. The total sample was 400 establishments. However, for reasons cited above, the sample was randomly divided into two subsamples and two different survey instruments were used (Appendix B).

The first mailing on April 7, 1982, was followed by the second mailing one month later. The cut-off date for receipt of questionnaires was June 7, 1982. The disposition of the total sample is as follows:

Table A-2

Comparison of the Distribution of Industrial Shipper Survey Respondents
with the Distribution of Manufacturers in the Population

<u>Census Region</u>	<u>Size of SMSA*</u>	<u>Plants Employing > 100 Located in SMSA's with Population of > 200,000</u>		<u>Responses to Industrial Shipper Survey</u>		<u>Responses to Follow-up Survey</u>	
		<u>Plants</u>	<u>% of Total</u>	<u>Firms</u>	<u>% of Total</u>	<u>Firms</u>	<u>% of Total</u>
Northeast	Large (7)	5,041	23.1	42	21.8	44	18.7
	Small (27)	2,601	11.9	20	10.4	10	4.2
North Central	Large (9)	4,939	22.6	34	22.3	66	27.8
	Small (28)	2,065	9.5	18	9.3	26	11.0
South	Large (8)	1,523	7.0	20	10.4	29	12.2
	Small (43)	2,576	11.8	22	11.4	26	11.0
West	Large (9)	2,605	11.9	23	11.9	30	12.6
	Small (17)	487	2.2	5	2.6	6	2.5
Total		21,837	100.0%	193	100.1%	237	100.0%

*Large SMSA's have populations of 1,000,000 or more; small SMSA's have populations between 200,000 and 999,999. The number in the parentheses is the number of SMSA's falling into that bracket.

5

Usable responses received	237
Respondent not an industrial shipper	16
Questionnaires arrived too late to be included	9
Incomplete or otherwise unusable questionnaires	6
Shipper is not using for-hire motor carriers	3
Questionnaires returned undelivered	3
Refusals	2
Addressee out of business	1
No response	123

The distribution of usable responses by SMSA is shown in Table A-2.

FACTORS ASSOCIATED WITH MODE UTILIZATION AND ANTICIPATED
EFFECTS OF REGULATORY REFORM: A STUDY OF MANUFACTURERS IN
RURAL NORTH CAROLINA*

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ABSTRACT

The problem structuring this investigation is to identify distinguishing characteristics of rural manufacturers which impinge upon modal choice and to determine which manufacturers may be most affected by regulatory changes in the motor carrier industry. Interest in this problem stems from the results of a previous investigation of rural shippers/receivers in North Carolina (Evans et al, 1982).

A detailed review of literature suggested the existence of predictor variables or characteristics of user firms that could be used in determining shipper/receiver preference in mode choice. Primary data from the Evans et al (1982) study were used to develop and test twelve such variables as predictors of three categories of mode choice: UPS, common carriers, and private carriage. Both univariate and multiple discriminant analyses identified several of these variables as being significant discriminators of mode choice. Further, these same variables could successfully predict the firms' opinions on the anticipated effects of the package of four proposed regulatory changes (the four issues of entry, exit, commodity restrictions and rates, as mentioned above).

Changes in regulations could possibly increase the competitive position of common carriers in relation to private carriage but not in relation to UPS, at least for North Carolina manufacturers in predominantly rural counties. User firms, which from their characteristics are either similar to common carrier users or users of private carriage, may benefit from increased competition among common carriers for truckload shipments. However, large firms, particularly large textile firms, might be most adversely affected by changes in regulation and, hence, may increase their use of UPS.

*An unpublished Master of Science thesis

THE NEW ENTRANT AIRLINES: IMPLICATIONS FOR
TRANSPORTATION REGULATORY REFORM

by

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The Airline Deregulation Act of 1978 marked a major step toward deregulation of a once highly regulated industry. Airline deregulation has been followed by major regulatory reform of the trucking and railroad industries in 1980 and, most recently, the intercity bus industry in 1982. Most of the public debate prior to passage of regulatory reform legislation in all of these industries focused on the expected actions of the established carriers. Largely overlooked in both the airline and intercity bus industries was the possibility that new opportunities would be created not only for the established carriers, but for entirely new carriers as well.

In the airline industry, an important post-deregulation development has been the introduction of simple, no-frill jet service with very low fares in short to medium-haul markets. In these markets, most of the competition has come from entirely new jet equipped carriers or from expansion of what were previously intrastate carriers confined by Civil Aeronautics Board (CAB) regulation to operations within one state (e.g. California, Texas, or Florida).

This paper begins with an analysis of the management strategies and subsequent experiences of the new entrant jet carriers, and their possible future impact on the airline industry. The paper next turns to an examination of some of the potential impacts of regulatory reform in the intercity bus industry. Specifically, the paper addresses the possibility of new low cost bus carriers challenging the relatively high cost incumbent carriers in a manner similar to that in the airline

industry. While there are important differences in the character of the airline and intercity bus industries, there are important parallels as well.

AIRLINE DEREGULATION CHANGES THE RULES

Airline passenger regulation formally began with the creation of the Civil Aeronautics Authority (CAA) in 1938, which was reorganized into the Civil Aeronautics Board in 1940. The major elements of airline economic regulation remained essentially unchanged from then until 1976, when the move toward less regulation began.

Under CAB regulation, an airline was required to have a "Certificate of Public Convenience and Necessity" before offering scheduled service on any route. Authority to issue certificates allowed the CAB to control both entry into the industry and also the route structure of each major airline since certificates specified both the pair of cities that were the end points of a route and the intermediate stops. When economic regulation began in 1938, 16 carriers were granted grandfather rights to continue operations. Through mergers, these 16 carriers had evolved into 10 domestic trunk airlines by the mid-1970s. Although there were many applications over the years, no new trunk carriers were allowed to enter the industry under CAB regulation.

Another critical aspect of CAB regulation was the ability to control fares in two different ways: (1) by approving, modifying, or rejecting requests for fare changes filed by individual

carriers; and (2) by directly setting either the exact fare, or a very narrow range of permissible fares. Fare offerings generally were limited to coach and first-class fares based on the mileage traveled, although the CAB allowed limited experimentation with discount or promotional fares at various times.

Regulation, to understate the case, was thus not conducive to innovation. The CAB almost invariably thwarted any attempt to introduce new or different concepts. With deregulation, however, the CAB no longer has complete control over such matters as entry, exit, routes, and fares. Indeed, the Deregulation Act even scheduled the eventual disbanding of the CAB itself, and the transfer of the few remaining regulatory functions to the Department of Transportation.

Two specific provisions of the Deregulation Act were crucial to opening up opportunities for new entrant jet carriers. The first provision was that an applicant for a route found "fit, willing, and able to properly perform air transportation" would not be denied route authority on the grounds that granting the certificate would divert traffic from an existing carrier. Under this provision, the CAB has processed applications quickly so that entry into any domestic route has become virtually automatic for qualified carriers, subject, of course, to the availability of airport and airway capacity for the route.

The second crucial provision was to give carriers freedom to set their own fares within a wide range without CAB approval. The range just after formal deregulation extended to as much as

50 percent below the Standard Industry Fare Level (SIFL) established by the CAB. The range of permissible fares was subsequently broadened and the CAB is scheduled eventually to give up all control over fares.

These two changes -- freedom to enter and to set fares -- allowed the new jet and former intrastate carriers to enter the markets they chose and quickly establish a presence by charging much lower fares than the incumbents. New entrant service was also usually simpler and lower in cost with fewer on-board amenities such as meals, movies, free drinks, etc. Costs were often further reduced by using nonunion labor who were cross-trained to perform several tasks, utilizing secondary airports, and not providing interlining with other carriers. Prior to deregulation, the CAB effectively prevented offering such low-fare/no-frills combinations, except in intrastate markets where they had no regulatory authority.

New entrant and former intrastate jet carriers accounted for less than five percent of domestic revenue passenger miles for the year ending in March 1982, yet their impact on the U.S. airline industry has already been far greater than their market share would suggest. Indeed, it may be that the most significant long-run impacts of airline deregulation will derive not from the initial adaptations of the established carriers, but rather from the more fundamental changes kindled by the competitive pressures provided by these low cost carriers.

NEW ENTRANTS' COMPETITIVE ADVANTAGE

The competitive advantage of the new entrant and former intrastate jet carriers over the established trunk and local service airlines is based on much lower costs. For example, Southwest (a former intrastate) and People Express (a new entrant) had operating expenses per available seat mile (ASM) of less than six cents while USAir's (a local service carrier) operating expenses over similar stage lengths were over eleven cents per ASM.

A CAB study compared Southwest's fully allocated cost of serving a 200-mile market using a B-737-200 with the costs of Piedmont (a local service carrier) and United (a trunk carrier) using the same type of aircraft.¹ Southwest's fully allocated cost for serving the market was only 66 percent of Piedmont's and only 53 percent of United's.² Moreover, since Southwest operated their aircraft with more seats and had a higher average load factor, their fully allocated cost per passenger was only 51 percent of Piedmont's and 41 percent of United's. Thus, Southwest had a cost advantage of \$23 per passenger over Piedmont and \$34 per passenger over United.

Much of Southwest's cost advantage came as a result of their streamlined approach to reservation and sales, savings in baggage handling due to not interlining, and limited pre-flight and inflight services for passengers. Indeed, 60 percent of their advantage over Piedmont and 37 percent of their advantage over United came from differences in these passenger specific costs.

Differences in food service, while highly visible to passengers did not represent a substantial cost advantage since the allocated food cost on a 200-mile flight is only about a dollar per passenger.

A second source of cost advantage came from factors related to the flight itself such as depreciation of the aircraft, fuel cost, landing fees, and aircraft servicing. Southwest concentrated on point to point turnaround service utilizing secondary airports to a much larger extent than Piedmont or United and, as a result, operated their aircraft an average of 9.5 hours per day while Piedmont averaged 7.3 hours per day and United only 5.2 hours per day. Largely because of these differences, Southwest gained 26 percent of their cost advantage over Piedmont and 27 percent of their cost advantage over United from these flight specific costs.

Obviously, some of these cost differences were due to the higher productivity and lower compensation of Southwest's labor force. These differences can be seen most clearly by examining cost differences for the flight crew and cabin crew. In 1981, Southwest's pilots flew 73 hours per month, while Piedmont's flew 49 hours and United's flew 43 hours. In addition, United's labor agreement in effect at that time required that they operate B-737s with three-man crews, while both Southwest and Piedmont operated with two-man crews. Southwest gained 12 percent of their cost advantage over Piedmont in flight crew costs and gained 19 percent of their cost advantage over United in flight crew costs.

The differences in cabin crew costs were not as great with only 2 percent of Southwest's advantage over Piedmont and 5 percent of their advantage over United coming via these differences. While Piedmont and Southwest had about the same overhead costs, Southwest gained 11 percent of their advantage over United through lower overhead costs.

Some of Southwest's cost advantage came through operating procedures which other carriers might be able to emulate. Specifically, Piedmont and United might be able to operate with Southwest's crew compliments, seating densities, load factors, and landing fees. Indeed, United's recent labor contract with its pilots calls for two-man cockpit crews for B-737s. While such changes would reduce Southwest's cost advantage, they would not eliminate it. Even with these changes, Southwest's fully allocated cost per passenger would still be only 65 percent of Piedmont's and 57 percent of United's. Thus, Southwest would still retain a \$13 per passenger advantage over Piedmont and an \$18 per passenger advantage over United.

While Southwest, a former intrastate carrier, is a model of low cost operations, their performance is not unique. Indeed, People Express, a new entrant, has achieved slightly lower costs (although while operating slightly longer average stage lengths). All of the new entrant and former intrastate jet carriers operating in short to medium length markets have achieved some cost advantages, although usually not as dramatic as those of Southwest or People Express.

FINANCING NEW ENTRY

A large cost advantage, or the prospect of achieving such a cost advantage, has been instrumental in attracting financing for the new carriers to start operations. New entrant jet carriers have relied primarily on four sources of finance: venture capital firms, public offerings, Federal Aviation Administration (FAA) Loan Guarantees, and leasing (rather than purchasing) aircraft.

The opportunities for low cost jet service that emerged as airline regulation lessened, caught the attention of venture capital firms, but actual investment was not immediately forthcoming. The founders of Midway Airlines, for example, began before formal deregulation and spent three years raising sufficient capital to start operations. The first round of financing was secured by July 1979 when almost \$6 million was raised from the sale of convertible preferred stock to more than a dozen venture capitalists. Midway then raised over \$17 million with two public offerings.

Midway's success undoubtedly helped smooth the way for several subsequent new entrants. People Express, for example, received \$200,000 of first stage equity financing from FNCB Capital Corporation (Citicorp Venture Capital) in exchange for almost 13 percent of the stock, in combination with raising an additional \$800,000 from its founders and directors. Following Midway's pattern, six months later People Express raised more than \$25 million through a public offering.

Midway and People Express also made extensive use of the FAA Loan Guarantee Program which insured loans on up to 90 percent of the purchase price of the aircraft, spare parts, and engines. These loan guarantees reduced interest rates to carriers by as much as four percentage points thereby reducing the debt service drain on cash flow. Through January 1982, four new entrant carriers -- Midway, Muse Air, New York Air, and People Express -- received guaranteed loans totalling over \$140 million. For example, Midway used loan guarantees to finance the acquisition of four DC-9-30s and one DC-9-15 and People Express used them to finance fourteen B-737-100s.

New entrant jet carriers have also been able to reduce their initial capital needs by leasing some of their aircraft rather than relying solely on purchases. Through June 30, 1981, the new entrants had leased 34 percent of their fleet. By contrast; trunk airlines through the same period had leased 21 percent and local service airlines had leased only 16 percent. Leasing has been made a more attractive option than previously by recent changes to provisions of the U.S. tax laws.

NEW ENTRANT OPERATING STRATEGIES

An examination of a sample of new entrant and former intrastate jet carriers -- specifically Midway, New York Air, People Express, Pacific Southwest Airlines (PSA), and Southwest -- revealed that all of these carriers have featured low fares as the primary means of exploiting their cost advantage. The extent

to which they cut fares, however, varied considerably.

The fare policies of the new entrant and former intrastate jet carriers were examined for all markets of the new entrants and all interstate markets of the former intrastate carriers as of June 15, 1981. These fares were compared to the Standard Industry Fare Level (SIFL) then in effect. The SIFL, incidently, was not the maximum fare that could be charged. Indeed, as of June 15, 1981, the average coach fare for markets less than 850 miles was about 8.5 percent above SIFL.

Two carriers, People Express and Southwest, adopted virtually identical pricing strategies of deep fare cuts and simple fare structures with both peak and off-peak fares. Peak or weekday fares averaged 53 percent of SIFL for People Express and 60 percent of SIFL for Southwest. Off-peak or weekend fares averaged only about 34 percent of SIFL for People Express and 42 percent of SIFL for Southwest. These carriers also kept their fare structure simple by charging identical fares in markets of similar distance. Three of People Express's five markets had fares of \$35 peak and \$23 off peak. All of Southwest's interstate markets were either \$40 peak and \$25 off peak or \$60 peak and \$45 off-peak.

Two other carriers, New York Air and PSA, also adopted similar strategies, but made more moderate fare cuts. New York Air's peak fares averaged about 75 percent of SIFL and PSA's interstate fares averaged about 79 percent. In part, these less dramatic cuts probably reflect that these carriers had higher

operating costs than did People Express or Southwest.

Midway made only modest cuts in fares with peak fares averaging 96 percent of SIFL and off-peak fares averaging 75 percent of SIFL. While Midway's fare cuts appear slight compared to other new entrants and former intrastates, two of their eight markets involve New York's LaGuardia or Washington's National airport, both highly congested airports. Operations in these airports entail higher than average costs and, as a result, fares in markets involving these airports are typically above average. New York Air operates frequently out of LaGuardia and is, of course, subject to these same higher costs.

Midway's fare cuts even in non-congested markets, however, were less deep than other low fare carriers. Midway offered access to Chicago through the closer and less congested Midway airport and did not need to lower its fares quite as dramatically as other new entrants to attract passengers. Thus, fare competition played less of a role in Midway's strategy than it did for the other new entrant carriers.

The route strategies of the new entrants were strongly influenced by their fare and equipment strategies. A low fare strategy is most effective when fares are sufficiently low to attract enough public attention to establish a carrier's identity in the marketplace without massive expenditures on advertising. Profitable operation with low fares also usually necessitated keeping load factors high. Thus, the new entrants concentrated on medium or high density markets between large hubs or

connecting large hubs to medium hubs.

The new entrants also emphasized short and medium haul markets with most of their flight segments less than 500 miles and very few over 750 miles. The range limitations of the twin jet aircraft available in the used aircraft market partially influenced this choice but the new entrants were further discouraged from entering longer haul markets by the trunk airlines' excess capacity in long haul wide body aircraft. A clear symptom of this wide body excess capacity was the frequency and intensity of the fare wars in transcontinental and other long haul markets.

The emphasis on low fares and no-frills service generally attracted a higher proportion of nonbusiness travel than was typical for the established trunk and local service airlines. Indeed, in the markets served by these carriers, low fares could often stimulate enough additional nonbusiness travel to allow new entrants to achieve acceptable load factors without diverting substantial business traffic from established carriers.

Satellite or secondary reliever airports also played a central role in the operations of most new entrant carriers. As intrastate carriers, PSA and Southwest pioneered the use of satellite airports in large cities turning to secondary airports in San Francisco, Los Angeles, Dallas, and Houston as hubs from which to expand their routes after deregulation. Midway, as mentioned earlier, used Midway airport in Chicago for its hub instead of the more congested O'Hare. Similarly, People Express

based its operations out of Newark rather than LaGuardia. New York Air was an exception to the pattern and operated chiefly out of LaGuardia. In part because of the pressure to keep costs low in pursuing low fare strategies, the new entrant carriers have remained largely independent of the trunk and local service carriers and have avoided interline agreements with all but commuter airlines. The lack of interline agreements is not a severe drawback to many passengers since connecting opportunities are often limited at secondary airports.

Most of the low fare jet carriers have pursued a route development strategy of building hub and spoke systems using secondary airports as hubs. In starting up, a new entrant carrier would usually offer simple turnaround service to a few cities from its chosen base of operations. As the traffic built and additional aircraft were acquired, routes would usually be added from the base to additional cities. At some point, the carrier would begin to schedule flights from the spoke cities to arrive at the base or hub at about the same time to facilitate online connections and the carrier would evolve from turnaround service to a single hub network.

When a large number of connecting passengers developed between a specific pair of cities, a typical response was to route some aircraft from one of the cities through the hub to the second city thereby providing one stop single plane service within the hub and spoke system in addition to connecting service. If sufficient traffic developed on the one stop service, the next step could be simply to bypass or overfly the

hub and offer nonstop service between the two cities. The post-deregulation new entrants have operated either simple turnaround systems (e.g. Muse Air) or have evolved into single hub and spoke systems (e.g. People Express and Midway). As expansion continues, a second hub may be established. As of January 1, 1982, only the former intrastate carriers PSA and Southwest had established second hubs. With continued growth, it would not be surprising to see other low cost carriers establish multiple hubs.

RESPONSES OF THE ESTABLISHED CARRIERS

Entry by one of the new carriers into a market has usually provoked some sort of immediate response by the incumbent carriers. While specific responses have differed depending upon the market and the incumbent, one or more of three strategies has generally been used: (1) introducing a new matching fare category, (2) adjusting the range of an existing fare category, and (3) eliminating a fare category.

The most common response by incumbent carriers to new low fare competition has been to add new capacity-controlled discount fares that matched the fare offerings of the new entrants. Eastern Airlines, for example, introduced a supercoach fare at the same level as People Express's standard fare in the Boston-Newark market. All of Midway's major competitors in the Chicago-Washington market added supercoach fares to match Midway, even though their service was to O'Hare rather than Midway airport.

In general, the flexibility of a capacity-controlled discount fare has allowed the incumbents to counter the new entrant as needed, while minimizing the dilution of existing fares.

Carriers that already offered capacity-controlled discount fares in a newly entered market have often adjusted the range of the discount fare to include the new entrant's fare. Occasionally, an incumbent carrier has responded by altering its standard coach fare, but the changes have far more commonly been confined to discount fares. Finally, several incumbent carriers have streamlined their fare and service offerings by dropping fare categories when confronted by competition from new entrants. Republic-West eliminated its business coach fare retaining only standard coach and discount fares in the Los Angeles-Las Vegas and San Francisco-Las Vegas markets when these were contested by PSA.

The common thread in virtually all of the incumbent responses to the new entrant carriers has been to counter with some kind of capacity-controlled fare. A capacity-controlled fare allowed considerable flexibility in that it matched the new fare with a minimum dilution of existing fares. With capacity controls, the incumbents could offer only as many seats at the low fare as necessary. Moreover, an incumbent need not offer the same number of discount fare seats on every flight, but could alter the number of seats on a seasonal, weekly, or even daily basis depending on the demand and the offerings of the new entrant. Indeed, carriers with a sophisticated and computerized reservation system could even alter the number of seats available

for discount fares on an individual flight basis, making fewer discount seats available on a particular flight in response to a higher than normal rate of advance full fare bookings and vice versa.

While the immediate response of the established carriers to the new entrants has been greater use of capacity controlled discounts, the established carriers must look for a longer run course of action with the realization that under deregulation, very low fares based on very low costs are no longer confined to intrastate markets of Texas and California. Continued growth of the low cost new entrant carriers poses a difficult set of choices for the established carriers. The lower cost structure of the new entrants is a powerful competitive tool. To counter that tool in the absence of regulations to impede the growth of new entrants, the established carriers seem to have only three basic options. At the risk of oversimplifying, the choices seem to be: (1) beat them, (2) copy them, or (3) hire them. These three types of responses need not be used only singly, but could also be used in combination.

Beat Them. The "beat them" alternative relies on exploiting the advantages of the established carriers. Foremost among their advantages are their large hub and spoke route networks, made even more extensive by interline agreements. The size of these hub and spoke networks allows established carriers to serve markets profitably that are not dense enough to support either turnaround service or typical new entrant connecting service. A

hub and spoke network allows an established carrier to offer passengers online connections to any city served by a spoke and interline connections to any city served by another carrier operating out of the same hub. The established carriers with both more of their own spokes and interline agreements have a clear advantage over the new entrants.

A second major advantage is the established carriers' ability to offer capacity-controlled discount fares. Effective use of such fares stems from two factors: (1) the "full service" offerings attractive to business travelers, and (2) sophisticated computerized reservations systems. Once an airline is committed to making a flight, the marginal cost of serving an additional passenger in a seat that would otherwise have flown empty is very low -- almost always much lower than the fully allocated cost of carrying a passenger even for a low cost new entrant carrier. In high density markets, using wide body aircraft may enhance the ability of established carriers to offer a substantial number of seats at discount fares.

The trick, of course, is minimizing the use of these discount fares by passengers who would otherwise have paid the higher fare and minimizing the displacement of full fare passengers by discount fare passengers. Carriers have generally placed restrictions on the use of discount fares that were unacceptable to most business passengers, thus trying to segment the market into full fare business passengers and discount fare leisure passengers who might not otherwise have flown at the higher full fare.³ Computerized reservations systems have

improved carriers ability to estimate the number of full fare passengers and reserve enough seats to serve them, and to monitor full fare and discount fare reservations as the flight draws near and make any necessary adjustments to prevent displacement of full fare passengers with leisure fare passengers.

Two features of typical new entrant jet service make it difficult to offer capacity-controlled discount fares. First, to offer such discounts would eliminate their simplified fare structures -- both adding to their costs and removing a marketing tool. Second, to make effective use of such fares would require a sophisticated computerized reservations system -- again adding to their costs.

Computerized reservations systems coupled with extensive route systems give established carriers a third advantage over the new entrants by enabling them to offer "frequent flyer" programs. Carriers offering such programs keep track of the amount traveled by an individual on their routes. A traveler who has amassed a specified number of flights or miles on the system is entitled to additional travel on the system or other benefits at no cost. Such programs can be quite attractive to individuals who travel frequently. To the extent that the travel is for business, and that the employer does not try to recapture the bonus travel, the program is an income transfer from employer to employee implemented by the airline. New entrants would find it difficult to offer such programs. They typically lack both the computerized system to implement such a program and the extensive

route networks, including routes to vacation spots and abroad, needed to make it attractive to travelers.

To exploit their advantages in trying to beat the new entrants, the established carriers could further differentiate their service offerings from those of the new entrants. With the important exception of the use of capacity controlled discounts, the strategy calls not for taking on the new entrants head to head with low fares, but rather insuring that the new entrants cannot effectively take full service, full fare traffic from the established carriers. A drawback to this approach is that it may result in the established carriers having a smaller share of total airline traffic, as well as less traffic in absolute terms. Moreover, to the extent that it cedes important travel segments to the new entrants, it facilitates new entrant network growth. As new entrant networks grow, the established carriers may see their network related advantages diminish and their traffic further erode.

Copy Them. The "copy them" alternative entails the established carriers emulating the new entrants in an effort to lower their cost structure and compete head to head. Labor relations are the most obvious barrier facing an established carrier trying to replicate the low cost structure of the new entrants. With the notable exception of Delta, the established carriers are highly unionized. The work rule and wage concessions necessary to approach the cost structures of the new entrants might be difficult for a union to accept. As has been the case in the auto and steel industries, however, some

concessions may not be beyond the realm of possibility in the face of financial troubles. Indeed, some wage and work rule concessions have already been made. Pilots at United and Western have agreed to fly B-737s with two rather than three in the cockpit and employees at several established carriers have accepted salary cuts in lieu of layoffs. The extent to which these concessions would remain in the face of an improving economy is, however, unclear. Even with substantial concessions, new entrants would retain the short-term cost advantage of a greater proportion of workers at or near entry level wages.

The unions are far from the only impediment and, indeed, may not even be the major one. Management, itself, may be equally difficult to reorient to streamlined, low cost operations. Most established carriers have sizeable management staffs -- in some cases a plethora of vice-presidents. To match new entrant cost structures, these staffs would have to be trimmed considerably, and managers themselves would have to undergo cross training in different tasks not too dissimilar from that of labor. Once management levels were trimmed, those managers who remained would have to focus on far different planning, operational, and marketing goals than had been the case prior to deregulation and the rise of the new entrants.

Hire Them. The "hire them" alternative is based on acquiring some of the cost advantages of the new entrants rather than trying to combat or replicate them. To illustrate how such a strategy might work, consider a market served by an established

carrier in which the carrier was breaking even or just barely making money. That carrier, realizing that a lower cost structure combined with added traffic from lower fares could turn the market profitable, might offer the market to a low cost carrier. The established carrier could provide those specialized services at which it was particularly effective -- computerized reservations, terminal facilities, and aircraft scheduling and maintenance, for example. In addition, it might offer to lease its used aircraft to the low cost carrier. Such arrangements could easily be structured to benefit both established and new entrant carrier.

Such arrangements are not without precedent, even in the airline industry. The Allegheny Commuter System franchises worked in a similar manner. Beginning in the late 1960s, Allegheny Airlines (now USAir) realized that with its cost structure, it could not economically operate the commuter aircraft appropriate for many of the points on its certificates. Instead, it contracted with independent commuter operators to provide feeder service to USAir points. In exchange for a modest fee and some added operating requirements, USAir provided the commuters with both name identification and a variety of services difficult for the commuters to provide by themselves. Both USAir and the individual commuters appear to have benefited from these arrangements. Another approach was that used in setting up New York Air as a low cost new entrant. Texas International, a unionized local service airline, was organized as part of a holding company - Texas Air Corporation. The holding company was

able to establish New York Air as a nonunion, low-cost carrier and lease them aircraft. Many established carriers are organized as part of holding companies. The trunks have already grown used to selling or leasing aircraft to foreign airlines. Turning aircraft over to domestic carriers who would not compete directly might not be too large a step for some established carriers to take.

The hire them approach could face substantial barriers to implementation. First of all, the unions are unlikely to embrace such arrangements eagerly. Indeed, the Texas International employees tried, unsuccessfully, to block the formation of New York Air in court. In exchange for other concessions, United has agreed that their (union) pilots will fly all aircraft operated by the holding company, UAL, Inc. While there seem to be no insurmountable legal obstacles to such moves, carriers trying to make such arrangements might face work stoppages in their own unionized operations. There could also be problems in transferring routes involving slot controlled airports to low cost carriers. In spite of these and other potential barriers, variations of this approach could prove viable for some established carriers.

IMPLICATIONS FOR THE INTERCITY BUS INDUSTRY

The new entrants have broadened the range of fare and service offerings available to travelers both through their own pricing policies and by helping compete away the restrictions placed on discount fares in the markets they contested. Of

perhaps more importance, the new entrant jet carriers have been an added force for improving airline productivity and lowering costs. The increased competition fostered by deregulation would have increased pressure on the airlines to lower their costs to some extent even in the absence of the new entrants. The new entrants, however, have greatly intensified that pressure by demonstrating just how low costs can be driven by streamlining service offerings, and being free of the wage levels and work rule restrictions of unionized labor.

In intensifying the pressure for low costs, the new entrants may have weakened labor's ability to capture productivity gains from technological improvements, at least to the extent possible under regulation. The new entrants have also forced the established airlines' managements to evaluate their aircraft acquisition decisions, as well as their pricing and route decisions with much more care than in the past. In sum, the new entrant jet carriers have been central to some of the most significant changes to the airline industry under deregulation.

While there are major differences between the domestic airline industry and the intercity bus industry, there are some similarities as well that suggest the low cost new entrant phenomenon may not ultimately be confined to the airlines. Indeed, the history of the industry's development under regulation, the cost characteristics of the major carriers, and the major provisions of the regulatory reform legislation all have important parallels between the bus and airline industries.

Entry into the intercity bus industry has been regulated by the Interstate Commerce Commission (ICC) as provided by the Motor Carrier Act of 1935. While somewhat more lenient than the CAB, the ICC has nevertheless been quite restrictive in permitting new entry into the industry. The ICC has been charged to grant operating authority only when required by the "public convenience and necessity", but has interpreted that provision to make entry difficult for service that would compete with any existing carrier. A recent study has concluded that, as a result, routes connecting 72 percent of the city pairs sampled were served by only a single carrier, and an additional 26 percent were served by only two carriers.⁴ The study further concluded that as many as 75 percent of the city pairs may be served by fewer carriers than the traffic is capable of supporting. Thus the potential for added competition would seem substantial.

Some liberalization in ICC policy toward new entry occurred in 1979, and applications by parties requesting their first ICC authority increased from 12 percent of all applications filed in 1978 to 23 percent of those filed in 1980.⁵ This increase suggests that previous ICC policy may well have severely restricted new entry. As with the new entrant airlines, part of the motive for new entry may stem from the belief that new entrant bus operators can achieve a cost advantage over the incumbents.

Estimating potential bus costs under regulatory reform is difficult since experience in the U.S. is so limited. Two states

(Arizona and Florida) had enacted substantial regulatory reform for intrastate service prior to the Bus Regulatory Reform Act of 1982, but even experience there is too recent to draw strong implications from. However, by comparing the reported expenses of some of the lowest cost small carriers with the average expenses of Class I carriers (dominated by Greyhound and Trailways), some insight can be gained into the potential for low cost operations. Such a comparison reveals that costs per bus-mile might be as much as 20 percent lower for comparable service.⁶ Most of this cost advantage comes from lower wages and fringes for drivers, and lower general and administrative costs. While this cost advantage is not as great as some of the new entrant jet carriers have over their established rivals, neither has the bus industry had the incentives to lower costs in response to fare freedoms that the pre-deregulation intrastate airlines had.

The Bus Regulatory Reform Act of 1982 also has provisions similar to those in the Airline Deregulation Act of 1978 that opened the door for new entrant jet airlines. The Bus Act creates a presumption that an application for a new route is consistent with the public interest and places the burden on any who protest the award to provide sufficient evidence to negate the presumption of consistency. This change from previous regulation should make it relatively easy for a qualified applicant to obtain route authority. The Bus Act also establishes a zone of rate freedom within which carriers are free to set fares without ICC approval. The zone allows fares to be

lowered up to 20 percent in the first year following the passage of the Act, 25 percent in the second year, 30 percent in the third year, and even more freedom following that.

Thus, while the Bus Act does not go as far toward deregulation as did the Airline Act, it does contain the key provisions to allow new entrant low fare service. As with the airlines, the established bus carriers, sheltered from intense competition by protective regulation, have permitted their costs to rise above the minimum needed to provide the service. Moreover, entry has been restricted so that many existing routes are receiving service from fewer carriers than traffic levels could support. An opportunity has thus been created for low fare service from new entry by low cost carriers. Whether this entry materializes and whether the resulting impacts are similar to those in the airline industry will depend on many factors unique to the bus industry. Given the importance of low cost entry in the airline industry, a similar development in the bus industry would warrant close further study.

FOOTNOTES

1. David R. Graham and Daniel P. Kaplan, Competition and the Airlines: An Evaluation of Deregulation, Staff Report, Office of Economic Analysis, Civil Aeronautics Board, December 1982. Chapter 4.
2. These figures are derived from data presented in Graham and Kaplan, Table 4.1.
3. For a more complete discussion of the use of discount fares see: John R. Meyer and Clinton V. Oster, Jr., Eds., Airline Deregulation: The Early Experience, (Boston: Auburn House, 1981), Chapter 4.
4. Mandix, Inc., "Economic Concentration in the Intercity Bus Industry," Final Report prepared for the Office of Regulatory Policy, U.S. Department of Transportation, July 15, 1981.
5. Mandix, Inc., "New Entry Into the Intercity Bus Industry," Final Report Prepared for the Office of Regulatory Policy, U.S. Department of Transportation, July 15, 1981.
6. John R. Meyer and Clinton V. Oster, Jr., Eds. Airline Deregulation and the Economics of Intercity Transportation, Harvard Airline Deregulation Study, manuscript in preparation.

State Regulation and Motor Carrier
Service to Small Communities

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State Regulation and Motor Carrier

Service to Small Communities

One of the more emotional issues in the motor carrier regulatory reform debate has been the impact of regulation and regulatory reform on service to small communities. Opponents of regulatory reform believed that ICC regulation offered significant protection to small community shippers. They protested that the economic growth and development of rural communities would be hindered if the regulatory reform proposals were passed. On the other hand, proponents of regulatory reform argued that the fears of the opponents were misplaced. They believed that ICC regulation had little effect on the quantity and quality of service offered to small, rural communities.¹

While the general arguments of the regulatory reform advocates were accepted by the Congress and the President with the passage of the Motor Carrier Act (MCA) of 1980, the issue of the role of regulation in promoting service to small communities was left undecided. In Section 28 of the MCA, the Congress called upon the ICC to "make a full investigation and study of motor carrier service to small communities," emphasizing service to communities with populations of less than 5,000. The ICC's subsequent report (1982) to the Congress suggests that regulatory reform has not diminished service to small towns, but rather has induced some improvements in service. This is not a surprising result, given that it would appear that interstate small community service offered in the pre-reform period appears to have been the result of profit-seeking behavior on the part of interstate motor carriers, rather than the result of regulatory coercion or cross-subsidy policies.²

The Role of State Regulation

A variety of other motor carrier services are also typically provided small communities in addition to ICC-regulated service, including private, exempt, small parcel, bus express, and intrastate service.³ The remainder of this paper will examine the role of state regulation in promoting service to small communities.

The actual or potential presence of intrastate carriers may affect the overall quality of service offered a market. Intrastate carriers may improve the quality of service in a market directly by increasing service frequency to the small community; they may improve the quality of service in the market indirectly by forcing interstate carriers to improve their services in order to remain competitive with the intrastate carriers. Of course, this competition need not be restricted to quality of service competition; the price in the market may also be affected by the presence or absence of viable intrastate trucking alternatives.

To study the impact of state motor carrier regulation on service to small communities, we have selected four states to examine in detail: Texas, Ohio, South Dakota, and Florida. As will be demonstrated below, wide variance exists in the motor carrier regulatory philosophies of these states, which allows one to measure the effects of liberal/restrictive regulatory policy on intrastate service offered to small communities.

Regulation in Texas

The intrastate motor carrier industry in Texas is regulated by the Railroad Commission of Texas (TRC). Entry into intrastate motor carrier markets is tightly restricted by the Railroad Commission.⁴ To enter a Texas market, a carrier must demonstrate that existing service in that mar-

ket is inadequate. If incumbent carriers on the route protest the application, proving inadequacy of service in Texas is a difficult, expensive, and risky undertaking. The Railroad Commission also carefully scrutinizes any proposed changes in motor carrier rates. The Railroad Commission requires the carriers to provide detailed revenue and cost data pertaining to intrastate Texas operations before deciding whether a proposed rate change should be allowed to go into effect. The Railroad Commission similarly takes an active approach in the handling of shipper complaints. The Commission's records indicate that shipper complaints are responded to and resolved by the staff, oftentimes on the same day the complaint is received.

The Railroad Commission believes that its policies promote service to small communities in two major ways. The Railroad Commission argues its policy of encouraging uniform pricing for transportation services regardless of community size promotes small community service and equalizes the industrial development opportunities available to Texas communities of all sizes. Staff members also claim that the TRC informally suggests to carriers that truckers applying to serve small communities in addition to large communities on a route will enhance their chances of receiving an award of authority.

However, these pricing and entry policies do not necessarily cross-subsidize small community service. The policy of encouraging uniform pricing regardless of community size, in particular, may have unintended consequences. Assume that this policy has the effect of reducing trucking prices for serving small community markets. This would make provision of service to small communities less desirable than it would be in the absence of regulation. Carriers would be less willing to provide the service and

more likely to abandon the community or to cut back on the quality of service provided the town unless the Commission continuously monitors the quality of service offered the town.

Similarly, an informal policy of encouraging carriers to apply to serve small community markets in order to be able to serve larger communities may or may not promote much small community service. The efficacy of this policy depends upon the parameters of the potential cross-subsidies offered by the Railroad Commission. It should also be noted that if in fact the uniform pricing policy restrains prices in small community markets, then the uniform pricing policy acts to reduce the efficacy of the entry cross-subsidy program, ceteris paribus.

Nonetheless, given its discretion over motor carrier entry, the Railroad Commission could act to cross-subsidize small community service. Whether in fact its policies actually have this effect is an empirical question.

Regulation in Ohio

The intrastate motor carrier industry in Ohio is regulated by the Public Utilities Commission of Ohio (PUCO). Regulation of entry is similar in nature to that in Texas. Carriers seeking to obtain authority to serve a motor carrier market must demonstrate the inadequacy of existing service. Proving that service is inadequate is extremely difficult if incumbent carriers on the route protest the route application. Ohio's regulation of motor carrier rates is far less rigorous than that of Texas, however. PUCO examines data concerning the system-wide operations of a selected sample of motor carriers in determining motor carrier rate requests. It generally permits rate changes that reflect demonstrated changes in carrier costs.

No formal rate of return or operating ratio analysis is performed by the Commission in reviewing requests for adjustments in motor carrier rates.

The Public Utilities Commission does not utilize cross-subsidies or regulatory coercion to promote small community service. Examination of carrier entry petitions and operating rights transfer petitions suggests no hesitancy on the part of intrastate motor carriers in Ohio to provide service to small communities. It would appear that the intrastate motor carrier service offered to small Ohio communities is the result of market forces and is not attributable to regulation. As such, these communities should continue to receive service even in the absence of PUCO regulation.

Regulation in South Dakota

The intrastate motor carrier industry in South Dakota is regulated by the Public Utilities Commission of South Dakota. Regulation of motor carriage in South Dakota recently underwent significant regulatory reform. The South Dakota Motor Carrier Act was amended effective July 1, 1981. The 1981 amendments relaxed the statutory standards for entry into intrastate South Dakota markets. The 1981 amendments shifted the burden of proof in entry cases from the applicant to the protestant. Moreover, the protestant must demonstrate some harm to the public interest other than a negative impact on its operations if it has any hope of denying the applicant new authority.

South Dakota regulates motor carrier rates in a relatively informal manner. In establishing general commodity rates, it reviews data submissions from three large LTL carriers that account for ninety percent of South Dakota intrastate LTL revenues. The Public Utilities Commission al-

lows rate increases in proportion to proven cost increases over the time period since the last rate increase. It would appear that LTL rates in South Dakota average 65 to 70 percent of comparable interstate rates. This occurs despite the lack of competition in most South Dakota markets, which is attributable to the thinness of traffic in these markets.

A review of entry petitions and transfer petitions indicates that motor carriers appear willing to provide intrastate service to small communities in South Dakota despite these low prices. Since the Commission does not utilize cross-subsidies or regulatory coercion to promote these services, the intrastate services that are provided by motor carriers in South Dakota would appear to be attributable to market forces.

Regulation in Florida

The intrastate motor carrier industry in Florida was deregulated under the terms of that state's sunset law effective July 1, 1980. Freedom of entry and price-setting thus exist in intra-Florida markets.

Empirical Results

These four states thus present a wide range of motor carrier regulatory policies. We wish to examine the impact of these state regulatory policies on the intrastate service offered to small communities in these states.

To accomplish this objective, for each state, a sample of fifty cities with populations of less than 2,000 was developed. An initial list of fifty cities for each state was constructed by recording the first twenty-five cities of less than 2,000 population listed in the 1978 Rand McNally Road Atlas beginning with the letter "A" and the first twenty-five cities of less than 2,000 population listed beginning with the letter "N." Any city

that (1) was contiguous to a major metropolitan area or (2) was classified by the National Highway and Airway Carriers and Routes (NHACR) Fall 1982 guide as being in a commercial zone was excluded from the sample. Replacement communities were selected sequentially starting with the twenty-sixth city of less than 2,000 population in the "N" list until a full sample of fifty cities was developed for each state. The replacement communities were also screened to ensure that they were not contiguous to a metropolitan area or were not classified by the NHACR guide as being in a commercial zone.

The NHACR guide was used to determine the level of service offered to each community. This guide provides for each community a list of LTL general commodity carriers providing in-bound service to the community. Very few terminals are listed at these points: the Texas sample had one community with a terminal, South Dakota three, Ohio two, and Florida none. Thus little information is available about the extent of outbound service. The guide also reports whether the carrier provides interstate service, intrastate service, or both.

Carriers must pay to be listed in the guide. Their payment is not a function of the number of cities they list. Thus, the guide indicates the level of service offered a community (as measured by the number of carriers listed under the community's name), rather than the level of service authorized to the community. Tables 1 and 2 describe the levels of service offered to the sampled communities by state. Table 1 recounts the results for the sample as a whole. Column 1 of Table 1 reports the number of communities sampled for each state. Column 2 indicates the number of these sampled communities which actually receive trucking service as reported in

Table 1

Motor Carrier Service to Sampled
Communities with Populations Less Than 2000

	<u>Number of Communities</u>		<u>Average Population</u>	<u>Average Carriers per Community</u>		
	<u>Sampled</u>	<u>Receiving Service</u>		<u>Total</u>	<u>Interstate Service</u>	<u>Intrastate Service</u>
Florida	50	50	800	10.1	10.1	1.5
South Dakota	50	44	673	1.5	1.5	1.0
Ohio	50	50	840	10.9	10.4	2.2
Texas	50	43	780	3.7	3.6	1.0

Table 2

Motor Carrier Service to Sampled
Communities with Populations Less Than 500

	<u>Number of Communities</u>		<u>Average Population</u>	<u>Average Carriers per Community</u>		
	<u>Sampled</u>	<u>Receiving Service</u>		<u>Total</u>	<u>Interstate Service</u>	<u>Intrastate Service</u>
Florida	16	16	355	8.8	8.8	1.4
South Dakota	20	16	290	1.3	1.3	.8
Ohio	11	11	240	6.5	5.8	1.3
Texas	18	13	303	1.9	1.9	.4

Motor Carrier Service to Sampled Communities
With Populations Between 500 and 1000

	<u>Number of Communities</u>		<u>Average Population</u>	<u>Average Carriers per Community</u>		
	<u>Sampled</u>	<u>Receiving Service</u>		<u>Total</u>	<u>Interstate Service</u>	<u>Intrastate Service</u>
Florida	19	19	727	11.5	11.5	1.7
South Dakota	22	20	739	1.6	1.6	1.0
Ohio	24	24	802	11.8	11.3	2.4
Texas	18	17	691	4.8	4.7	1.2

Motor Carrier Service to Sampled Communities
with Populations Between 1000 and 2000

	<u>Number of Communities</u>		<u>Average Population</u>	<u>Average Carriers per Community</u>		
	<u>Sampled</u>	<u>Receiving Service</u>		<u>Total</u>	<u>Interstate Service</u>	<u>Intrastate Service</u>
Florida	15	15	1369	9.7	9.7	1.4
South Dakota	8	8	1448	1.8	1.8	1.5
Ohio	15	15	1338	12.8	12.3	2.7
Texas	14	13	1509	4.4	4.4	1.3

the guide. Column 3 notes the average population of the sampled communities. Column 4 states the average number of carriers per community providing service to the sampled communities. Columns 5 and 6 report the average number of carriers providing interstate and intrastate service, respectively, to the sampled communities. The sum of columns 5 and 6 often exceeds the value indicated in column 4 because many carriers possess both interstate and intrastate operating authority.

For the sampled communities, the average level of both interstate and intrastate service provided is highest in Ohio. The average sampled Ohio community receives interstate service from 10.4 carriers and intrastate service from 2.2 carriers. Florida is next highest with 10.1 interstate and 1.5 intrastate carriers. The average Texas community receives more than twice as much interstate service as the average sampled South Dakota community; however, the average level of intrastate service was identical for the sampled Texas and South Dakota communities.

Table 2 provides information similar to that contained in Table 1, except that the sample has been disaggregated to report results for three different size categories of communities separately. In the smallest size category, communities with populations of less than 500, the average sampled community in Florida received the most service. South Dakota communities of this size received the least interstate service on average, while Texas communities received the least intrastate service.

In the middle size group--communities with populations between 500 and 1000--the sampled Ohio communities on average received the most intrastate service while Florida communities received the most interstate service. The sampled South Dakota communities of this size on average received the

lowest level of interstate and intrastate service. This pattern is generally duplicated for the largest size group, although the lowest level of intrastate service in this size group on average is offered to Texas communities.

This overall pattern of service presented in Tables 1 and 2 does not support the argument that Texas Railroad Commission regulation increases the level of intrastate service offered to small Texas communities. More interstate and intrastate service is offered to small communities in Ohio and Florida than to comparable small communities in Texas. In two of the three sub-samples, a higher level of intrastate service on average was offered South Dakota communities than comparable Texas communities. The relatively low level of intrastate service offered to Texas small communities is even more surprising given that Texas is the largest intrastate market in the nation. According to the 1976 Continuous Traffic Study, the intrastate general commodity market in Texas is 2.4 times that of Ohio, 13.6 times that of Florida, and 239 times that of South Dakota.

It should be noted that PUCO entry regulation is as restrictive as that of the Texas Railroad Commission. Yet the sampled small Ohio communities appear to receive high levels of intrastate service. This may be due to the nature of the operating authority granted by the two regulatory commissions. In Texas, all of the general commodity LTL operating rights granted are regular route authority. Most small communities are authorized to be served by no more than one or two carriers. In Ohio, most general commodity LTL authority grants permission to transport general commodities to and from a named point (a city, township, etc.) to and from all points in Ohio. A small town could thus legally be served by dozens of carriers.

Armed with this freedom, Ohio carriers apparently do provide relatively high levels of intrastate service to small Ohio communities.

Summary

In this paper we have attempted to assess the effect of state regulation on intrastate service offered to small communities in four sampled states. A simple measure of the service offered to sampled small communities using the National Highway and Airway Carriers and Routes guide as the data source was developed. The sampled small communities in Ohio received the highest average level of intrastate service among the four states using our measure; sampled communities in Florida received the next best average intrastate service. Entry into intrastate markets in Ohio is difficult; entry into intrastate markets in Florida is free. However, because of the Public Utilities Commission of Ohio's issuance of state-wide general commodity irregular route authority, dozens of carriers are free to--but not required to--provide service to small Ohio communities. PUCO regulation apparently allows carriers the freedom to construct efficient route networks to serve these small towns.

Lesser intrastate service on average is provided the sampled small communities in Texas and South Dakota by our measure. Entry into intrastate South Dakota markets has been substantially relaxed effective July 1, 1981. Entry into intrastate Texas markets is quite difficult. Despite the professed interest of the Railroad Commission in protecting small community service, the evidence collected herein does not support the argument that Railroad Commission regulation on net has promoted intrastate service to small Texas communities. Of course, as a rather simplistic measure of service has been used in this paper, more work needs to be done before more definitive conclusions can be drawn.

FOOTNOTES

1. See Stafford (1974), Brown (1975), and American Trucking Associations (1976) for representative views of opponents of regulatory reform. See Canellos (1976) and Snow (1977) for representative views of the proponents of regulatory reform.
2. See Chapter II of Pustay (1982) for an elaboration of this point.
3. See Borlaug (1979).
4. See Pustay (1982) for a more detailed discussion of the regulatory policies and procedures in Texas, Ohio, and South Dakota.

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Regulatory Reform of the
Intercity Bus Industry

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Regulatory Reform of the Intercity Bus Industry

Introduction

The Motor Carrier Act of 1935 not only ended an era of free competition for the interstate trucking industry, but imposed the same regulatory regime on the interstate, intercity bus industry. Most economists have not believed that the structural characteristics of the motor carrier industry warranted regulation by the Interstate Commerce Commission (ICC). Over the years, in the face of mounting criticism of the effects of economic regulation, several attempts have been made to deregulate the industry. Although not complete deregulation, the Motor Carrier Act of 1980 provided regulatory reform of the trucking industry. The reform of economic regulation of the motor carrier industry went the next logical step with the passage of the Bus Regulatory Reform Act of 1982 (BRRA) in September, 1982.

This paper will discuss the principal provisions of the BRRA and their likely impact on the industry. However, before doing that it is important to examine the economic rationale for the regulation under which the industry has operated for over 45 years. In this analysis we will draw on studies performed for the U.S. Department of Transportation (DOT) as well as the work of other investigators.

Rationale for Regulation

In this section we will present the rationale for the economic regulation of the intercity bus industry and a critique of that rationale.

ICC regulation of the U.S. intercity bus industry has had two major components, restriction of entry and control of fares. State regulatory authorities in almost every state (Florida deregulated its motor carrier

industry in July 1980, Alaska deregulated its bus industry in June 1980 and Arizona's motor carrier industry was deregulated effective July 1982) also apply entry and fare control, but in addition have been much more vigorous in regulating bus firms' exit from routes and the conditions of service.

The principal economic arguments offered to support such actions are (1) competition in the intercity bus industry won't work because the industry is either a natural monopoly and/or prone to destructive competition and (2) regulation is necessary in order to insure bus service to small communities^{1/}.

Natural monopoly. The situation when the firm's long run average cost curve is declining over the range of output where demand conditions indicate that the industry would operate, is a natural monopoly. Having more than one firm supplying a market sacrifices economies of scale and raises the unit cost of supplying the product or service. If economies of scale are significant relative to the size of the market, it is more efficient to limit entry and to regulate the prices of the chosen producer so that it will not be able to exploit its monopoly position. This is the condition that prevails in traditional natural monopolies such as local electric power, gas, or telephone service.

Studies of economies of scale in the intercity bus industry, however, do not find the significant economies of scale that give rise to a natural monopoly condition. The best U.S. study to date was done by Fravel, Tauchen, and Gilbert for DOT. This analysis utilized the 1975 financial and operating data reported to the ICC by 114 Class I firms and 271 Class II and Class III firms. Fravel et al used a translog function in their cost equation and

included variables for the firm's service mix and factor input prices, as well as the scale of operations. These features of the estimating relationship enabled them to deal with criticisms of previous economies of scale studies for failing to allow for differences in the output mix of firms (the smaller carriers, especially in the Class II and III categories tend to have relatively more charter and special operations service, while the larger Class I firms operate relatively more regular route service). For the Class I firms, which provide most of the regular route service, there were either constant or almost constant returns to scale. Whether or not a particular firm experienced economies of scale depended on its level of output in bus-miles and its mix of services. For example, Greyhound, the industry's largest firm, was producing a volume of output and a product mix that gave it very slight diseconomies of scale.^{2/}

In contrast to Fravel et al's results, Williams and Hall did find economies of scale to exist in the intercity bus industry. However, although they also used a translog function, Williams and Hall did not make adjustments for differences in the carrier's service mix. They could not really do so because, instead of individual carrier data, Williams and Hall used average values by ICC region of the Class I carriers' operating and cost data. They also omitted Greyhound from their study because Greyhound was not reported by the ICC as a regional carrier.^{3/} For these reasons, and for some other deficiencies, the Williams and Hall study probably should not be given the same weight in drawing conclusions about economies of scale in the U.S. intercity bus industry as is given to the work of Fravel et al. The latter's conclusion is also more consistent with a

study of economies of scale in the Canadian intercity bus industry which found constant returns to scale for most firms but decreasing returns to scale for the largest four firms.^{4/}

Destructive competition. Another basis for arguing that free competition in the intercity bus industry won't perform well and must be replaced by regulation is destructive or "cutthroat" competition. This generally means that if either overinvestment or cyclical declines in demand occur, creating excess capacity in the industry, free competition among firms will drive prices well below fully allocated cost and give rise to a wave of bankruptcies. The survival of firms will depend more on their financial strength than on their inherent efficiency as producers. When demand revives, there will be capacity shortages with sharp increases in prices and inadequate service. Such instability is considered harmful to both firms and their customers.^{5/}

Although the effects of the 1930s depression on the motor carrier industry were severe and, at that time, may have tended to support the argument that competition must be regulated, bus operation, like trucking, does not have the structural characteristics normally associated with industries prone to destructive competition. As compared to capital in many industries, that of the intercity bus industry is relatively short lived, and capacity can be adjusted in relatively small increments. Buses are also mobile and, barring regulatory-imposed exit and entry barriers, can be shifted from market to market in response to demand changes. Instead of being characterized by high fixed and low variable costs, studies of bus industry costs, such as that of Gillen and Oum, generally find that a very high percentage of total cost is variable in the short run, and that all costs are variable in the long run.^{6/}

Small community service/subsidization. The second major argument for economic regulation is that it is essential in order to preserve service to small communities. The intercity bus industry has been prominent among public transportation modes in the number of communities served -- 14,600 in 1981 compared to 525 for Amtrak rail passenger service, and about 551 for the airlines. Without regulation to prevent entry into profitable operations, it has been argued that bus companies could not provide the cross-subsidies needed to maintain unprofitable small town service. However, regulation has been no guarantee of service. DOT found that between 1972 and 1979 approximately 1,800 communities lost all service and in ten rural case study areas there was an 11% decline in the number of one-way intercity schedules between 1969 and 1979.^{8/}

The existence of extensive cross-subsidization under regulation is also doubtful. One alleged form of cross-subsidization is from profitable charter operations to less profitable regular route service. However, representatives of both Greyhound and Trailways have stated that their charter operations did not subsidize their regular route service. Because charter operations are relatively less important for these carriers than for some of the smaller firms in the industry, DOT analyzed the 1979 operations of 205 carriers with a greater potential for cross-subsidization. The analysis concluded that only 6% of the regular route mileage operated by these carriers appeared to possibly require cross-subsidization, i.e. revenue per mile was less than system average expense per mile. However, upon closer examination with allowance for the age and type of equipment operated on these routes that appeared to be in need of cross-subsidization, the investigator concluded "that a major portion of this mileage was not the beneficiary of cross-subsidization".^{9/}

It is more difficult to determine whether, in regular route operation, high density routes are generating profits to subsidize the losses on low density service to small communities. Generally it is not possible to obtain intercity bus companies' revenues and costs on a route-by-route basis. However, Reschenthaler was able to obtain such data for the Province of Alberta, the major Canadian market for Greyhound. There is no reason to believe that the Alberta experience is unique. Reschenthaler found "little evidence of cross subsidization" and "clearly no cross subsidization on a large scale." "If the Alberta market is representative, then cross-subsidization accounts for but one or two percent of intercity carrier revenues in Canada."^{10/}

Effects of Regulation on Industry Structure

Although the intercity bus industry does not appear from the above arguments to be an appropriate candidate for economic regulation, it has had such regulation by the ICC since 1935 with definitive effects upon the industry's structure. In 1935 there were 2,120 intercity bus companies operating, while in 1981 there were estimated to be only 1,470.^{12/} The 46 Class I companies account for about 90 percent of all passenger miles in scheduled intercity service and virtually all of the bus package express business. However, the smaller Class II and Class III companies carry about two-thirds of all bus passengers in charter and tour service where the smaller firms, in the aggregate, are much more important than the relatively larger Class I firms. Two firms, Greyhound and Trailways, tower over the rest of the industry, together accounting in 1981 for 62% of Class I revenue passengers, 80% of Class I revenue passenger miles, and 81% of Class I operating revenues.^{13/}

Much of this concentration is due to the effects of entry regulation. DOT studies found that few new regular route operating authorities have been granted by the ICC. Out of the 84 applications for regular route authority filed between 1976 and 1978, only five were filed by new firms. Although all five such applications were approved, the cost of proving that the service was needed to meet the public convenience and necessity in the face of frequent protest by existing firms is believed to have discouraged new applicants.^{14/} However, since January 1979, the ICC has instituted policies to make the entry application process easier, with an increase in the relative number of applications from new firms and a reduction in the length of time in processing applications.^{15/} There also was a significant drop in the percentage of regular route applications protested, from 66% in 1978 to 22% in 1980. However, protests of charter authority applications, which made up over three quarters of all applications for authority submitted to the ICC, dropped much less, from 76% in 1978 to 64% in 1980.^{16/}

Concentration in the regular route sector of the intercity bus industry is even higher on a city-pair market basis than it is overall. A DOT study of a sample of 414 city-pairs in 1981 found 72% of the city-pairs served by only one carrier, 26% served by 2 carriers, 2% served by 3 carriers, and none with more than 3 carriers.^{17/} Greyhound serviced 57% of the city-pair route segments, Trailways provided service on 48%, and independent carriers on only 15%.^{18/} Thin demand probably accounts for some of this concentration. However, regulation-related entry barriers may have generated a significant amount of this concentration. Based upon the relationship between demand and service levels, it was estimated that 75% of the city-pairs in the sample could have supported at least one additional carrier.^{19/}

Principal Provisions of the Bus Regulatory Reform Act of 1982

The Reagan Administration advocated total deregulation of the bus industry because, as we have discussed above, there is no valid economic justification for regulating this industry. However, recognizing the truth of the ancient Chinese proverb that a journey of a thousand miles begins with a single step, the Administration supported the substantial reforms of the Bus Regulatory Reform Act of 1982 as the first step toward the endpoint of total deregulation of the industry.^{20/}

Although the BRRA has a great many provisions, we will focus only on those which have the greatest significance for the reduction of economic regulation. These are the sections that reduce regulation-imposed entry barriers, those that create conditions for freer and more competitive pricing, and those that provide relief from burdens on interstate bus operators resulting from state regulation of intrastate operations.

Entry. Entry into regular route, charter and special operations service should be significantly eased by the provisions of Section 6 of the BRRA. No longer must bus companies establish that their entry into a market is consistent with public convenience and necessity (PCN). Now the basic tests for new entrants are their fitness, and for most regular route operations, also whether the entry is in the public interest. A fitness-only test is applied to applicants for charter and special operations authority; for regular route applicants on routes where there either is no existing regular route service, or such service as there is, presently is in the process of being discontinued; and when bus service could be provided to substitute for discontinued rail or air passenger service.

An important improvement in the BRRRA in going from the House through the Senate is in the definition of fitness. As passed by the Senate and included in the final bill, fitness is defined as safety fitness and evidence of adequate insurance. The House version of the bill had called for a finding that a firm was also operationally and financially fit. These additional fitness elements would have had the ICC second-guessing the management decisions of potential new bus operators, and could have resulted in a significant barrier to new entry by imposing a more restrictive concept of fitness than the ICC was employing prior to the BRRRA. The free operations of the market should best determine which bus operators have the necessary industry knowledge, management skills, and financial resources. The public is protected against potential market failure in the requirement for a good safety record and adequate insurance.

These provisions should facilitate new entry into charter and special operations by reducing the time lags involved in the application process, especially when an application is protested. While, as noted above, a DOT study found that in 1980 64% of the charter applications were protested, fitness is a relatively minor basis for opposing an application; e.g. in 1980 only 14 percent of the opposed applications were protested on the grounds that the applicant was unfit.^{21/}

After determining that a regular route applicant is fit, the ICC is to grant authority unless protestants can demonstrate that the proposed service is not consistent with the public interest. The ICC starts with the presumption of consistency and the burden of proof is on opponents of the application to provide sufficient evidence to rebut that presumption.

The factors that the ICC is to consider in making its public interest determination are the national transportation policy, the value of competition to the using public, the effect on small community service, and whether the new service applied for would impair the ability of an existing carrier to provide a substantial portion of the service that it provides over its entire regular route system. This last consideration may still be a device for protecting existing firms at the expense of the process of competition, but the ICC may interpret it as protecting established firms only against competition that borders on predatory. The BRRRA as it was passed by the House contained even more restrictive considerations but these were eliminated in the Senate and Conference versions of the bill.

Competition will be opened up further by permitting service to intermediate points on a carrier's routes, and by elimination of state-imposed "closed door" restrictions on buses operating on intrastate segments of interstate routes. An example of the latter type of restriction was the state of Ohio's refusal to allow Trailways to carry intrastate passengers on its two major interstate routes through Ohio because the firm could not satisfy a demanding PC&N test, even though it had many witnesses testify in support of its service application.^{22/}

Pricing flexibility. Several sections of the BRRRA should lead to more competitive and flexible prices in the intercity bus industry. Charter and special operations fares are completely free of ICC regulation (section 12) unless they are determined to be predatory. Bus firms are also no longer allowed to set such rates collectively through the industry rate bureau, although they may still use the rate bureau to publish the rates. Advance notice of rate changes is still required, 30 days notice for rate

increases and 10 days notice for rate decreases. Although this sector of the bus industry apparently was already characterized by a great deal of independent action on fares, these provisions of the BRRRA will enhance that characteristic.

Regular route operators should also be encouraged to pursue more independent and flexible pricing. Section 11 establishes a zone of rate freedom (ZORF) in which carriers are free to change rates within the established range without prior ICC approval, although the ICC must be notified if a carrier wants a rate considered under the ZORF. The limits of the ZORF are 10 percent above and 20 percent below the rates in effect one year prior to the effective date of the proposed rate. After one year, the range widens to 15 percent above and 25 percent below the rates then in effect, and after two years becomes 20 percent above and 30 percent below. Three years after the effective date the ICC loses all authority to suspend rates unless they are predatory or discriminatory. The rationale for this provision is that intercity bus companies will face enough actual or potential intramodal and intermodal competition to prevent monopolistic exploitation of the greater rate freedom.^{23/} The limits are widened gradually as entry is anticipated to grow. However, protestants may still challenge the reasonableness of rates filed under the ZORF, and the ICC will act on such complaints. Rates under the ZORF are subject to the antitrust laws, so they must be made by an individual carrier outside of rate bureau activity.

The BRRRA also restricts the scope of collective ratemaking through the industry's rate bureau, the National Bus Traffic Association (NBTA). Prior to the passage of the BRRRA carriers could collectively discuss and set rates free of antitrust prosecution provided that the ICC had approved the agreement for collective action. The BRRRA narrows the scope of antitrust

immunity by eliminating the antitrust exemption for collective action on single-line rates on January 1, 1983, and on joint-line rates on January 1, 1984. However, the bus industry will still be allowed to use the rate bureau to discuss and formulate general rate increases and decreases based upon industry average carrier costs and intermodal competitive conditions. The NBTA may also be used for broad changes in tariff structures, for changes in promotional or innovative fares, such as the unlimited-use passes to "See America", to publish tariffs and to provide support services such as tracing lost baggage, etc. The industry's need for antitrust immunity for collective ratemaking will also be examined by the Motor Carrier Ratemaking Study Commission, which is to submit its report to the President and Congress by January 1, 1984.

Removing antitrust immunity for single-line and joint-line rates but retaining it for general rate increases will not, in itself, have a major impact on collective ratemaking in the intercity bus industry, because collective action has, for the most part, been in the form of general rate increases. However, since general rate increases cannot be taken with the ZORF, carriers have an increased incentive to pursue independent pricing policies.

Relief from state regulation. The final major area of the BRRRA are the sections which provide relief from state regulation which burdens the interstate operations of the carriers. Although the bus industry had long complained about ICC regulatory lag, the adverse effect of state regulation was the driving force that led the industry to seek reform. In addition to overturning intrastate "closed-door" entry policies, the BRRRA provides an avenue of relief from state regulation which imposes an unreasonable burden on interstate commerce in regard to rates, scheduling, and exit.

The intercity bus industry compiled and presented to the House and Senate Committees numerous examples of the adverse effects of state bus regulation. State regulation not only threatens the financial well-being of the industry and depresses the cash flow needed to replace capital equipment and facilities, but also forces interstate passengers to subsidize intrastate passengers.

State regulation has both depressed intrastate fares relative to interstate fares and imposed significant revenue losses associated with the regulatory lag in acting on fare increase proposals. Some examples to illustrate this point are as follows: Although the distance between LaCrosse and Tomah, Wisconsin, is the same as the distance between La Crosse and Prosper, Minnesota, Hiawatha Coaches may only charge \$3.51 on the former, intrastate route while on the latter, interstate route it may charge \$5.40. It is 400 miles from Los Angeles to San Francisco, California, as well as from Los Angeles to Phoenix, Arizona, but from Los Angeles to San Francisco, Trailways fare is \$25.39 while between Los Angeles and Phoenix it is \$39.60.^{24/} These interstate-intrastate disparities are confirmed by a DOT study of 164 city pairs which found that, on routes less than 400 miles, intrastate fares averaged 31 percent lower than interstate fares, while on routes 400 miles or longer intrastate fares averaged 41 percent less than interstate fares.^{25/}

It may be objected that similar disparities between intrastate and interstate air fares were used to demonstrate the anti-competitive effects of CAB regulation of the airline industry and to support airline deregulation. However, unlike the differences between intrastate and interstate air fares, which were the product of regulatory "benign neglect" and free

competition among airlines in California and Texas, both of those states and many others applied slow and rigid regulation to the intercity bus industry. This regulatory process is reflected in the regulatory lag on fare increase requests. During the 1976-80 period the California Public Utilities Commission took respectively 359 and 245 days on Greyhound's last two general rate increase requests even though there was no opposition to them, no hearings were held, and the Commission ultimately approved them in full; Greyhound estimated the lost revenues associated with these delays at \$10,000 to \$20,000 per day. Texas was one of the states where the average delay from the proposed effective date of a rate increase to the actual effective date was 100 days.^{26/} Although some states have been faster and more reasonable in responding to requests for rate changes, these examples are not atypical.

Substantial regulatory lag and inflexible regulation have also been a problem with some states' responses to industry requests to adjust schedules or discontinue service on low-density, money-losing routes. For example, Trailways tried to discontinue service on a route between Springfield, Missouri, and Muskogee, Oklahoma. However, because neither State would authorize discontinuance of its respective intrastate segment, Trailways experienced a loss of \$86,329. In 1977, Trailways tried to reduce its service between Logan and Charleston, West Virginia, from two round trips daily to one, because only 6 passengers were riding in any one direction in a 46-passenger bus. Trailways was unable to reduce the schedule until 3 years after its initial application, during which time it lost \$176,674 on the route.^{27/}

The BRRRA will provide a means of relief from such onerous state regulation which threatens the industry's financial viability. Section 16 allows the carrier to petition the ICC for exit relief from state authorities. In order to be eligible, the carrier must apply to discontinue service on both the interstate and intrastate portion of a route and have failed to get relief from the appropriate state agency within 120 days of its application. If the carrier has met the requisite conditions, including notification of the state agency, the state governor, and the affected communities that the firm intends to petition the ICC for relief, in the case of petitions to the ICC which are not protested the ICC must allow the carrier to discontinue service. If the State or any other person protests, the ICC must permit discontinuance unless it can be shown that to continue the service would not be an unreasonable burden on interstate commerce or discontinuance is inconsistent with the public interest. If the revenues from the interstate and intrastate sources are sufficient to cover the variable costs of operating the service, there is no burden on interstate commerce as defined by the BRRRA. In making a determination of whether the carrier's request is consistent with the public interest the ICC must consider (1) the national transportation policy, (2) whether the carrier is receiving or has received an offer of financial assistance, (3) whether the service to be discontinued is the "last bus out", and (4) whether the discontinuance will have a significant adverse effect on commuter bus operations. If the ICC fails to find either an unreasonable burden or consistency with the public interest, it may not preempt the state's decision. Even if the ICC approves discontinuance of the service, it may require the carrier to continue service for an additional 165 days

so that the state and affected communities have some time to find a replacement carrier. The ICC is required to complete action on exit petitions within 90 days from the date when the petition is filed.

Although carriers may not have to continue serving unprofitable intrastate route requirements, wholesale exit from small community service is not likely. First, it is possible that under the threat of such action and/or the rate relief provisions of the BRRRA, carriers may be able to adjust rates sufficiently to cover variable costs. Also DOT studies of the Florida experience with complete deregulation of the bus industry did not indicate that exits on a large scale are probable. Of a sample of 50 small Florida communities, 31 had service points in their own communities in 1979 prior to deregulation and in 1981, a year after deregulation, 27 still had such service although not always by the same carrier as prior to deregulation.^{28/} Since the easing of exit through petition to the ICC is substantially less than what would be available under total deregulation, there appears to be little likelihood of a significant loss of service to small communities relative to the pattern prior to passage of the BRRRA.

Section 17 of the BRRRA provides relief from discriminatory state regulation of the rates and practices of interstate bus operators. Except for intrastate commuter service, the states are proscribed from regulating schedule changes and rate reductions on the intrastate portions of interstate routes. However, on schedule changes carriers must give 30 days advance notice to the states; and any rate reduction that the ICC finds to be predatory is unlawful. States continue to retain their authority over intrastate commuter service.

The ICC is given appellate review power over the intrastate rates of interstate bus companies. However, this provision does not cover the

intrastate rates of solely intrastate carriers nor the rates of carriers owned or controlled by a state or local government. Much like the exit appeal provisions, a carrier must first apply for a rate increase to the appropriate state regulatory body and the state must either have denied the increase or failed to act on it within 120 days. The ICC then must prescribe the rate if it finds that the state action creates an unreasonable burden on interstate commerce. There is a rebuttable presumption that the intrastate rate creates an unreasonable burden whenever (1) the state fails to act finally within 120 days of the carrier's request for the rate change, (2) if the intrastate rate is less than the comparable interstate rates, and (3) the carrier can demonstrate that the state-imposed rate does not permit it to cover the variable costs of the service. The ICC will also find an unreasonable burden on interstate commerce if the most recent general rate increase allowed by the state is less than the most recent general rate increase applicable to interstate movements. As in the exit appeal provisions, the carrier is required to notify the state when it appeals to the ICC. The ICC is required to take final action within 60 days of receiving the carrier's application.

These provisions should lead to intrastate rates more closely matching comparable interstate rates with consequent improvement in carrier revenues. If all disparities are eliminated, intrastate rates could conceivably increase 30 to 40% since this is the average gap between intrastate and interstate rates on a cents-per-mile basis as determined by DOT study. However, it is also conceivable that some interstate rates could decrease as intrastate revenues rise. In the year following total deregulation of Florida's bus industry, fares on a number of routes increased on average by about 40%. However, even after these increases Florida intrastate fares tended to be less than interstate fares over comparable distances.^{29/}

Conclusion

It is still too soon to see the effects of the BRRRA; however, based upon the experience with airline deregulation and with bus deregulation in Florida and Great Britain since 1980, we expect regulatory reform to benefit both the intercity bus industry and those who use its services.

Airline Deregulation. In a number of ways, the intercity bus industry more clearly resembles the airline industry, in terms of structure, than the trucking industry with which it shares the term "motor carrier". At least until the Airline Deregulation Act of 1978 (ADA), the U.S. airline industry was dominated by a few large firms, called "trunks", with numerous, much smaller, regional and intrastate carriers. It was feared by many that the trunks, with their enormous size and alleged economies of scale, would take an even larger market share with the free route entry and fare deregulation of the ADA, and exit the many small cities they had authority -- but no longer the incentive -- to serve.

What has happened since the ADA, instead, is that the airline industry is less concentrated, as new entrants have entered the business and as regional and intrastate carriers have expanded into new markets from their hub strongholds. Whereas, between 1950 and 1975 only one carrier received a Civil Aeronautics Board (CAB) certificate, since 1978 89 carriers have become certificated, and 10 more applications are pending. And while the larger trunk airlines are having financial problems (primarily, we believe, due to the recession, fuel price increases, and the air traffic controllers' walkout), the traffic and financial performance of most regional carriers (e.g., Air Midwest, Piedmont, US Air, Peoples Express, and Southwest) have set records.

As far as small city service is concerned, it now appears to have been more of a problem before the ADA than after it. In the 40 years prior to the ADA, the CAB had permitted the airlines to cease service to 432 points. Since the ADA, as carriers exit others have entered, generally with aircraft sized more suitably to the market, and not a single community with guaranteed service has been abandoned. And while frequencies to "non-hub" airports have fallen by 10.8%, frequencies to small and medium hubs has increased by 3.6% and 13.1%, respectively.^{30/}

We believe the experience under the BRRRA will follow that of the ADA as new carriers enter, as existing smaller carriers enter new markets to compete head-to-head on many of the industry leaders' routes, and as small firms take over markets abandoned by large firms.

Florida. The early experience with Florida's deregulation found use of promotional fares as well as fare increases. Although a few towns lost service, overall Trailways and Greyhound increased both the total miles operated per week and the number of scheduled trips per week. Smaller carriers moved in to serve some of the routes abandoned by the larger firms. New charter companies were formed, charter rates were cut, and better charter service was available to users with consequent benefits for Florida's tourist industry.

Great Britain. Deregulation in Great Britain in 1980 led to significant new services on major bus routes and fares that were cut dramatically, not only by the new operators but also by the existing intercity bus lines, and British Rail and British Air, as well.^{31/}

The BRRRA is not total deregulation, but its reforms should provide easier entry and exit, greater pricing flexibility, and improved financial

performance in the intercity bus industry. It should pave the way to even less unnecessary government regulation of this mode which provides service to so many people and communities.

Footnotes

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REGULATORY INTERFACES AND THE TRUCKING INDUSTRY

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Introduction

Beyond determining the amount and type of trucking regulation appropriate for the most effective attainable performance of the industry is a consideration of the inter-modal interfaces as they are affected by the regulation designed for each mode. The effect of railroad regulation on the trucking industry is specifically relevant for this discussion. Inadequate consideration of this question leads to classic suboptimization in regulatory policy.

This paper contends that the level of regulation provided by the Motor Carrier Act of 1980¹ significantly improves the traditional pattern introduced by the Motor Carrier Act of 1935. Furthermore, additional deregulation, possibly leading to the demise of economic trucking controls, should be seriously considered since the ICC's residual powers are either inappropriate or only marginally significant.

Significant features of the railroad controls which survived under the Staggers Rail Act of 1980² adversely affect the public interest in the trucking industry. They involve defects in the regulation of both the prices and the

organization and structure of the transport system. It is a classic anomaly that intermodal relationships which triggered regulatory reform under the 4-R Act of 1976,³ reflected in concern over railroad freedom to compete effectively with trucking, were virtually ignored in considering the Staggers Act.

This paper's treatment of trucking regulation is rather brief since results of the substantial evaluation it is receiving are generally in accord with its position. Somewhat more attention is focused on the intermodal aspects of regulation which condition the pattern of trucking performance, considering specifically aspects of railroad and trucking regulation that condition competition and coordination between the two modes. This assessment of regulation and the trucking industry is as concerned with the Staggers Rail Act of 1980 as with the Motor Carrier Act of 1980.

Trucking Deregulation

The Motor Carrier Act of 1980

Evaluation of the results of the Motor Carrier Act of 1980 is complicated by the mixture of the deregulated environment with the economic recession. The reviews portray substantial downward rate pressures reflected either in actual reductions or in slowed inflationary increases. This development parallels significant market entry activity involving both new firms and the shift of existing carriers

into new commodity and geographically defined markets.

Accompanying these developments is the general financial deterioration of the industry, manifest by a significant increase in the number of bankruptcies even among well established firms. Attempts are made to distinguish the separate contributions to this financial deterioration of deregulation and of the recession. In maintaining its opposition to regulatory policy, the industry contends that the fiscal decline results from deregulation. Both forces are undoubtedly at work, and these developments are simply a competitive industry's reaction to market conditions. Price concessions responding to declining volume are designed to encourage equipment utilization, while market entry compensates for the vacuum built up from the restrictive policies of the past years. In any case, further consideration of the relative responsibility of deregulation and of the economic recession for industry finances is unnecessary since the evaluation can be based entirely on shipper experience under the deregulation regime.

A number of shipper surveys have probed the results of the Motor Carrier Act of 1980.⁴ They uniformly portray overwhelming shipper satisfaction with the performance of the trucking industry under the sharply restricted regulation with respect both to rates and to the quantity and quality of the services. The open entry policy has enhanced carrier availability and competitive pressure has increased

price/service options. This shipper evidence accords with abstract expectations of increased industry efficiency permitting these service/rate developments.

There are no compelling offsetting impacts worthy of attention. The trucking industry complaints are not an appropriate test of the efficacy of the regulatory evolution. Trucking profits which maintain the services required by the shipping community even under present adverse economic conditions are socially adequate. Social control efficiency requires only that the price/entry activity does not cause service deterioration or rate inflation. The current entry of new firms into the industry and of existing companies into new markets is not perverse even with the depressed economy. These entries do not introduce additional redundant capacity into the industry, but represent a reshuffling of a relatively stable pool of vehicles consistent with short-run adjustment to present requirements. Trade association experience indicates that dealer sales of neither new nor used trucks have been affected by the entry surge.⁵ Much of this is doubtless accounted for by owner operators securing authority to employ capacity already in the market.

No real social detriment results even if market invasion means exit for established carriers. Survival of the fittest is not wasteful in the trucking industry lacking a large component of long-lived assets. Nor is the market

entry reflected in altered operating authority of existing carriers perverse. It represents generally industry rationalization as carriers with restricted market occupancy enter those which fit most effectively their operating patterns, abandoning others less desirable for them but advantageous for another carrier. The net effect of this switching may well be increased competition in some markets.

The pricing activity is equally healthy and economic.⁶ In complaining of competitive pressures, the carriers contend that current rate practices are predatory and discriminatory. Predatory pricing in the trucking industry is untenable with free entry actively exercised since eliminating a competitor only temporarily is a losing game. The larger well established firms, expected to be predators, often are perversely the alleged victims.

The discount rates do not, as alleged, eliminate capacity which will be needed later. Capacity is acquired in small incremental units with short lives, permitting great flexibility which is enhanced by the mobility of the units. With price and profitability guides, total capacity and its market allocations can be adjusted quickly to requirements. Below cost rates will not be maintained and capacity mistakes can be readily corrected.

Present Control Patterns

Residual trucking regulation is either inappropriate or

only marginally significant. In the primary areas of pricing and entry there is now essentially no effective regulation.

Virtually all operating authority applications by both existing and new firms are granted and the few denials are largely for procedural rather than substantive reasons.⁷ Only about 1 percent of the 15,000 fiscal 1982 applications were denied, a rate virtually identical both for existing and for new carriers. Denials are not aimed at restricting competition but result largely from formal legalistic deficiencies in the applications which make the carrier's service proposal uncertain. An example is applications for nationwide authority where the applicant fails to show why its present operating authority is inadequate for its intended service. Many of the applicants experiencing denials for such procedural reasons return with corrected applications which are then granted.

The applications which are withdrawn or dismissed, amounting to 4 percent in 1982, also represent no real restriction on competition. Carriers often file overlapping applications, with the desired authority having been granted in a case already decided. Or the application may request the elimination of a certificate restriction previously corrected in a general ruling under a provision of the Motor Carrier Act of 1980 which mandated the broadening of operating authorities. In another type case, the applicant is

unaware that the operating authority extension requested is not required for its objectives since the transportation of the commodity at issue may be exempt from regulation. Under this statutory provision, the scope of over 40,000 certificates has been expanded to eliminate uneconomic operating restrictions, a reform which is essentially complete.⁸

The overall application rate has declined sharply from 7,000 to about 1,000 monthly. A surprisingly large proportion, about 40 percent of the 1982 applicants, are new firms entering the industry. This combination of relatively few applications and the importance of newcomers indicates that the market switching and the elimination of operating restrictions are virtually complete.

The relaxed level of rate control is comparable to that for entry. Virtually none of the countless numbers of new tariffs is litigated.⁹ The intense carrier competition under present economic conditions exerting downward pressure on rates gives shippers no occasion to protest. Rate bureaus are now prohibited from protesting members' rates, and individual carrier protests are seldom recognized by the Commission.

The main exception to the routine acceptance of filed tariffs are those applying to only certain named shippers, which are viewed as unlawfully discriminatory under established concepts. The ICC is considering eliminating even this prohibition, which affected only 53 tariffs in 1981,

recognizing the economic virtue of tailoring prices to specific shipper circumstances. The Commission may also reject tariffs submitted with the rates applicable on short notice. However, it is also considering the modification of its traditional policy requiring 30-days notice with a proposed rule which would reduce the period⁺⁰ to 10 days.¹⁰ The petitioners for the change assert that the 30-day period imposes substantial economic penalties on both the carriers and their customers.

The Commission has instituted a general investigation of current industry pricing practices.¹¹ The members publicly disagree whether this investigation should lead to the promulgation of a pricing policy or set of standards. It appears, however, that the inquiry will serve only as a forum to develop information for reporting to the Congress under the oversight provisions of the 1980 Act and not lead to any substantial interference with competitive pressures and pricing freedom.

In addition to the virtual absence of substantive control of entry or rates, two ICC proceedings involving vehicle leasing will if affirmed represent a substantial reduction in even the residual force of regulation. One would permit owner operators to lease vehicles to shippers with private carrier operations.¹² The decision, which is under appeal to the Federal courts, subjects the leasing arrangements to certain tests to insure that the owner operator's

- 9 -

services for private carriage are strictly under the shipper's control and are not a subterfuge for owner operator participation in for-hire transportation. It would, nevertheless, clearly expand their participation in transport markets.

Another recent decision permits private carriers to lease vehicles to for-hire carriers.¹³ These leases, which would also be subject to conditions to prevent private carriers from using this device as a subterfuge for engaging in full-scale for-hire operations, would permit their extensive participation in these markets. This desegmentation of industry vehicle supply enhancing owner operator and private carrier market participation effectively broadens the scope of relevant vehicle pools and thus improves the utilization of the entire vehicle fleet by reducing empty backhauls.¹⁴

The sharply reduced regulation requires new facilitating market institutions, including particularly information processing and brokerage. With the decline of collective pricing from the rate bureau restrictions in the deregulation package, shippers are deluged with numerous individual carrier tariffs subject to frequent change. They find it difficult to keep up with all relevant rates, including those of competitors. This requires information processing and retrieval beyond current practices which lag significantly behind the state-of-the-arts.¹⁵

In addition to such direct information supply, freight

brokers assemble necessary rate information for their clients and must serve an expanded brokerage role in response to greater owner operator market participation and the multiplication of the number of firms with virtually free entry. The important brokerage function, bringing together shippers demands and transportation service supply, is mushrooming since the Motor Carrier Act of 1980.¹⁶

Conclusions that the residual trucking regulation is unnecessary, undesirable, and of only marginal importance is confirmed by rather general expectations that trucking regulation will be ended in the near future. Having gone successfully this far, many observers perceive no reason for failing to complete the transition. Chairman Taylor of the ICC speaks publicly in these terms.¹⁷ It is reported that the national administration plans to introduce sunseting legislation for the I.C.C. in the 97th Congress.¹⁸

Intermodal Relationships: Competitive Rates

The Staggers Act and Differential Pricing

Railroads have traditionally employed differential pricing and the classical discrimination which is identified as prices with unequal relationships to marginal costs. This pricing system stems from railroad production and cost characteristics yielding significant elements of unattributable costs which cannot be causally traced to specific output categories. They arise from a large component of fixed

costs which do not vary proportionately with output and are associated with economies of scale.¹⁹ Furthermore, like many other types of enterprises, railroads produce a variety of outputs with a common plant. This variety can be distinguished in terms of the identity of the commodities transported, the type of equipment employed, or other dimensions. The result is economies of scope which arise because the cost of producing outputs A and B together is less than the cost of producing them separately.²⁰ These costs which either are fixed or are common to the collection of different outputs must be apportioned among services or outputs through demand elasticity.

A primary determinant of demand elasticity is competition. Noncompetitive services thus bear relatively high overhead contributions ~~rates~~, while those subject to competition are commonly characterized by relatively low contributions and rates. These differentials raise the question of appropriate limits on the higher rates exacted from the inelastic or "captive" traffic and the appropriate lower bounds for competitive rates.

The Staggers Rail Act of 1980 dealt with both of these dimensions and with the relationships between them.²¹ This Act was largely based on the central thesis that traditional patterns of control, designed initially to limit railroad monopoly power, were rendered unnecessary by the maturing of barge and truck competition and thus gratuitously and

uneconomically restricted railroad earnings. Maximum feasible competitive freedom and dependence on market controls to enhance efficiency and to improve railroad revenues were the hallmark of the new legislation.²²

Recognizing the competitive differences in transport markets, this Act considered the revenue adequacy of companies and the revenue contributions of specific rates paid by "captive" shippers. A leading requirement of both the 4-R and the Staggers Acts is the identification of "market dominance", or the absence of effective competition in a market.²³ In this balancing act pitting revenue requirements against captive shipper protection, the ICC is denied jurisdiction over upper rate limits except for charges exceeding a specified level measured by revenue/variable cost ratios increasing progressively from 160 in 1980 to as high as 180 by 1984.²⁴ This conflict between the statutory requirements of revenue adequacy and the protection of captive shippers has led the ICC to a major proceeding involving close examination of criteria for satisfying the two requirements.²⁵

The establishment of appropriate criteria for imposing rate ceilings is the central issue in this proceeding. A simultaneous consideration of the lower bounds of competitive rates is also required, however, since their failure to contribute adequately to revenue requirements imposes an extra revenue burden on the monopolistic traffic. Shippers

consistently emphasize this connection, with voluminous testimony supporting the contention of substantial undercharging of competitive services.²⁷

Distorted Competitive Relations

According to an ICC burden study, nearly 30 percent of railroad carloads are transported at rates which yield revenues less than the variable costs of the service.²⁸ But these ratios understate the problem since they inadequately measure the true cost responsibility of the traffic involved. The variable cost computation inappropriately treats all constant costs as unattributable to particular traffic and therefore as part of the unallocable overhead. A prime example is piggyback service where physical interchange facilities represent largely constant but allocable costs. The relevant measure for determining whether rates are compensatory thus ^{is} ~~are~~ the avoidable costs, which include both the variable costs traceable to specific traffic categories and the fixed costs for which they are also responsible.²⁹ These identifiable costs will be somewhat higher than the bare variable costs. The noncompensatory traffic which the railroads carry to impose a burden on the captive traffic thus substantially exceeds the 30 percent identified by variable cost measures.

The Staggers Rail Act deals explicitly with this connection between maximum and minimum rates in the Long-Canon amendment.³⁰ This provision requires the Commission to

consider in adjudicating proposed rate increases "(i) the amount of traffic which is transported at revenues which do not contribute to going concern value and efforts made to minimize such traffic; (ii) the amount of traffic which contributes only marginally to fixed costs and the extent to which, if any, rates on such traffic can be changed to maximize the revenues from such traffic."

This charge explicitly recognizes that the large volume of underpriced traffic as objectively measured by the revenue/cost ratios is accompanied by another component associated with traffic undoubtedly carried at rates making less than the attainable contribution to unattributable costs. According to the Commission, "...[W]e are very much aware that some railroads produce service at less than optimal rates and therefore are not maximizing the contribution of each piece of traffic to the overall revenue adequacy of the firm."³¹

The Commission's interpretation of its power was revealed in a recent decision where utility companies sought implementation of the Long-Canon Amendment.³² They argued that with complete pricing flexibility on competitive traffic, the railroads will intentionally or inadvertently cut rates to levels which subsidize that traffic and divert it from a more efficient mode. This situation then dictates effective implementation of Long-Canon to identify avoidable revenue shortfalls since excessive rates may be assessed on

captive traffic to compensate for the uneconomically low charges.

The ICC denied the petition to establish a data base and a formal implementation process. It concluded that the identification of noncompensatory rates using Rail Form A variable costs is inappropriate for implementing the Long-Canon amendment since the Staggers Act is predicated on "going concern value."³³ Rail prices may dip low enough to capture new and backhaul traffic so long as it contributes to this value. The appropriate reference for establishing minimum rates is thus a "presumptive cost floor" measured by the concept of directly variable costs which are intimately associated with transportation output. Its only three components are applicable linehaul, switching, and station clerical expense, although specific movements could entail additional variable elements.³⁴ This interpretation of "going concern value" replaces the Rail Form A long-run variable costs in the usual citation of noncompensatory rates. Furthermore, the Commission asserted that the railroads have made substantial progress in eliminating noncompensatory rates by abandoning unprofitable track segments, surcharging or cancelling unprofitable joint rates or routings, and applying the quarterly rail cost-adjustment factor.³⁵

The Commission's arguments range from unpersuasive to wrong. The continued reduction of avoidable losses which

the Commission envisages is far from assured since it overstates competitive pressures and efficient managerial responses. The corrective actions said to produce efficient pricing are strictly spurious. Applying the quarterly cost adjustment factor will not eliminate noncompensatory rates. Abandoning unprofitable track is also a dubious corrective because of the propensity to continue facility operations which cover short-run variable costs.³⁶ Surcharging joint rates or cancelling unprofitable participation has been of minor importance and the traffic mainly involved is not commonly motor carrier competitive.³⁷ But most significant is the Commission's erroneous adoption of strictly short-run costs as the Long-Canon standard. Aside from its implication for revenue contributions required of captive traffic, this concept of going concern value does violence to intermodal allocative efficiency. A rate which contributes to a railroad's going concern value is not efficient if resource costs are less to move the traffic by truck.

Except for the anemic and unexercised power provided by the Commission's interpretation of the Long-Canon amendment, the Staggers Act denies control over rates below the maximum threshold. Furthermore, the ICC has no basis for interjecting avoidable costs as a measure of acceptable minimum rates. The Commission can now take underpricing into account only in maximum rate adjudication and even this power is seriously attenuated.³⁸ Both the legislative and the Commission's administrative concerns over lower rate

limits are couched essentially in terms of the implications of depressed competitive rates for the revenue contributions imposed on captive shippers. Such rates, however, have adverse implications for the trucking industry as well. They not only restrict revenue opportunities, but also defeat efficient intermodal traffic allocation which was the mainspring for regulatory reform. The regulatory power to deal with this problem is inadequate or has not been effectively implemented, requiring corrective legislation and responsive ICC approaches.

Intermodal Relationships: Service Coordination

Federal regulatory policy has traditionally required separate ownership and operation of technologically differentiated transport modes. The governing statutes and their administrative^{ve} interpretation have forbidden firms of one mode to own and operate the facilities of another mode except under narrowly specified circumstances.³⁹ Segregation was designed to ensure strong and healthy competition and sound growth and development of the several modes. The Motor Carrier Act of 1935 required trucking services established subsequently by railroads to be closely related to the railroad operations. Although the restrictive statutory language explicitly applied only to railroad purchases of existing trucking companies, the Commission applied it also to operating authority grants. Recent Commission proceedings are, however, reversing the modal segregation policy.

Modal Segregation and the "Special Circumstances" Doctrine.

Under this policy, the few railroads which entered the trucking business prior to the 1935 entry limitations have conducted full-scale trucking operations unrelated to their rail routes and services, subject only to the geographical limitations uniformly imposed on all operating authorities. The ICC interpretation of the statute required railroad-controlled motor carrier operations to be supplemental to the rail service except under "special circumstances". To meet this test, the trucking must facilitate the railroad's internal operations by substituting trucks for way-freight trains for small merchandise shipments, as distinguished from directly competitive over-the-road trucking.⁴⁰ The "special circumstances" were realized only when the proposed services were not being adequately supplied by independent truckers. The restrictions imposed by the Commission have generally limited the railroad trucking operations both functionally and geographically, requiring that the traffic move on rail billing and rates, be confined to stations on the rail line, and have had a prior or subsequent rail haul.⁴¹

Piggyback taxed these restrictions by enhancing the potential of railroad trucking operations to encroach on the traffic of motor carriers, posing a serious competitive threat even though confined to rail rates and billing and despite a prior or subsequent rail haul. The ICC accordingly tightened the restrictions to limit the competitive

impact by permitting railroad trucking in connection with TOFC operations only where the new service was a direct substitute for uneconomical merchandise service.⁴²

The main justification for multimodal companies generally rests on the coordination potential. Under propitious conditions, the economic rationale for TOFC is impressive. This coordination capitalizes on the differing technological capabilities of the rail and truck modes to satisfy both the cost and service requirement of particular transportation missions, combining the low truck terminal costs and the low rail line-haul costs. The attractiveness of the coordinated service, however, depends on the achievable terminal savings, relative rail and truck line-haul costs and the mileage of each in a given haul, and the interface or transfer costs. TOFC must generate sufficient threshold traffic volume to achieve the essential conditions for market success, including dedicated trains, frequent service, and capital intensive transfer facilities. Under the traditional TOFC restrictions confining associated trucking to points on the rail line, the railroads are prohibited from developing efficient hinterland market areas which limits their capacity to achieve these threshold volumes. The coordination rationale for multimodal companies questionably implies that this organization is a prerequisite for effective intermodal services. Steps far short of this identified later can better achieve coordination goals.

The issue of railroad participation in the motor carrier industry was reopened in a recently decided Commission proceeding which proposed to eliminate the "special circumstances" doctrine.⁴³ It covers only operating authority grants and not purchases so its structural and competitive consequences are clouded, although there is no sound basis for different approaches, making the inclusion of authorities and operations acquired by purchase as a plausible development. Furthermore, the decision is being appealed to the courts by trucking interests so its potential effectiveness is uncertain. The Commission's order in this case and most of the testimony deals essentially with the legalistic bases and implications of this change, with little attention to potential adverse economic consequences. While on their face the restrictions are uneconomic, the structural and competitive impacts of free entry by railroads into trucking are more questionable and complex.

There is ample basis for the view that, contrary to the contention of the supporters of this action, it is more apt to inhibit than to advance coordination. The integrated organization of the components of the multimodal companies contemplated from unrestricted railroad trucking is unlikely to be realized, costing much of the asserted coordination benefits. Canadian experience is commonly invoked by multimodal company advocates to provide policy lessons since this organizational form has persisted there for many years. According to one prominent Canadian authority, Canadian

railroads undertook at first to establish highly coordinated and integrated operations between the rail and truck components of the companies.⁴⁴ This organization was, however, quite ineffective and the two technologies were then segregated into separate profit centers. Under this continuing arrangement, the two modal services are mutually independent, with the trucking segment employing rail TOFC services only to serve its independent purposes. According to this authority, the more rapid growth of intermodal services in Canada than in the United States is not attributable to the multimodal ownership but to greater pricing freedom. This Canadian experience is reinforced by the common assertion of United States railroad officials that with the removal of the barriers to multimodal ownership the contemplated organization would, as in Canada, divorce the two modal services into separate compartments.⁴⁵

Under these circumstances, it is unlikely that multimodal ownership will enhance the prospects for efficient coordinated services. On the contrary, complete integration would tend to discourage coordination by both railroads and truckers. Railroad incentive for developing competitive coordinated service through TOFC would be diminished because of a tendency to shield a substantial interest in proprietary trucking from this diversion. By the same token, any trucking industry incentive to divert traffic from all-truck hauls to TOFC, even for profit reasons, would be lessened if the railroads with whom they must cooperate

were full fledged competitors for their entire array of business. Under these circumstances, TOFC development would not only lag from trucker boycotts, but would further suffer from the deprivation of some potential traffic which would help to meet the threshold volume requirements for the frequent dedicated service necessary for competitive acceptance.

A final consideration is the unique contribution that trucking can bring to TOFC development. The railroads are competent in marketing the bulk commodity services in which they specialize, but are weak in the merchandise business. Their techniques for marketing the kind of movements associated with trucks, the source of TOFC traffic, are not fully developed.⁴⁶ Furthermore, a set of independent truckers can bring to a partnership far better sales coverage in geographically diverse markets than the railroads can independently supply.

It is frequently contended that profit motives must discourage separately owned companies from providing coordinated services. This barrier is not real, however, if the coordinated service is economically superior to alternative single-mode services and it should not otherwise be offered.⁴⁷ Economically superior service either can be produced at lower cost or is of higher quality, offering savings in transport or in inventory and other associated distribution costs. This economic superiority permits a higher

markup than the single-mode services afford and therefore a larger profit pool. So long as the proceeds are appropriately distributed, it is more profitable for each participant to do part of the job on all of the traffic than all of the job on part of the traffic.

If, for example, one participant has a very low or even a zero market share, its share of the coordination profits could be minimal and still warrant its participation and leave a residual profit element that makes the other partner better off as well. It pays a carrier to accept a partner even if the former controls all of the single-mode volume so long as the coordinated service is economically superior to alternative single-mode services in terms of cost or quality and thus yields a higher markup. Accordingly, it would certainly pay the railroads to accept motor carrier coordination partners in situations where they control far less than all of the traffic and often a minor share. By the same token, a railroad could make more profit from doing all of the coordination (rather than working with a motor carrier) only if the movement costs were less, the quality superior, or a positive balance of the two dimensions when in opposite direction that works to the advantage of the railroad-organized version of the coordinated services. Profitability considerations in a rational decision regime should not impede the development of intermodal services by independent companies.

The TOFC Exemption

The Commission has in another proceeding taken a significant step in establishing a congenial institutional environment for the development of intermodal services which does not involve multimodal ownership. In a March, 1981 decision, it exempted from all economic regulation rail and truck services provided by rail carriers in connection with trailer or container-on-flatcar (TOFC/COFC) services.⁴⁸ The exemption applies only to railroad ramp-to-ramp-transportation of the trailers and containers and to the associated trucking services directly owned and performed by the railroad. It does not extend to either truck transportation performed by railroad owned by separately incorporated subsidiaries or to independent trucking. Changes in the legal status of subsidiaries to enlarge the exemption are discouraged by the cost requirement that would be imposed to place employees under the Railroad Retirement Act.

The deregulation is based on discretionary powers granted to the ICC in the Staggers Rail Act of 1980 which authorized the exemption of rail services where regulation is not needed to prevent abuses of market power.⁴⁹ The statute further singles out TOFC service as an explicit candidate for exemption, indicating that "the Commission may exercise its authority...to exempt transportation that is provided by a rail carrier as part of a continuous intermo-

dal movement."⁵⁰ The Commission concluded that TOFC and motor carrier services are highly competitive, rail intramodal competition is active, service problems exacerbated by regulatory restraints impede TOFC marketing, and regulatory exemption would stimulate service improvements without harming individual shippers.⁵¹

While the welfare of shippers is a vital consideration, it must be recognized that the exemption creates severe modal interface problems in both pricing and coordination and is thus detrimental to allocative efficiency. Independent trucking services are artificially disadvantaged in competitive markets and independent truckers are denied an equal opportunity to participate in TOFC services.

Since deregulation, TOFC has enjoyed significant traffic gains. In the 13 weeks before deregulation, volume was down 6 percent from 1980 but rose nearly 5 percent in the following 13 weeks. The 1982 growth rate is 7-8 percent above 1981, which is in sharp contrast to the decline in total rail volume and is the first TOFC traffic increase during a recession.⁵²

The Commission emphasizes the close competitiveness of TOFC and truck services, noting that the rate spread between them has virtually disappeared. It dismissed the motor carrier's concern that the exemption would give the railroads a competitive advantage for merchandise traffic, with the observation that "the proper regulatory response is to

seek means of freeing motor carriers from regulatory restraints so that they may compete on equal terms rather than continue to restrain the railroads."⁵³ Such sentiments carry little weight in the absence of corrective action.

In view of present economic conditions and the close substitutability of the two modes, the TOFC growth represents a significant diversion from trucking which is partly attributable to unequal competitive opportunities. Regulated trucking is placed in a difficult position with respect to market access and pricing freedom in competing with the exempt TOFC services. Furthermore, some railroad executives believe that much of the piggyback traffic is being carried at unremunerative rates.⁵⁴

Abstract considerations support suggestions of underpricing to attract truck traffic. True "cream skimming", as distinguished from healthy and aggressive price competition, may occur where (1) a market is occupied by a producer having only a homogeneous set of outputs, and (2) that market is entered by a new rival characterized by high fixed and nonattributable costs having a line of output immune ~~from~~ from similar competition that can thus compensate for the depressed prices which support its market invasion.⁵⁵ These specifications perfectly fit the truck-TOFC case. Particularly in view of railroad pricing complications imposed by cost measurement problems and captive traffic, the TOFC service probably does involve prices below avoidable costs and

even more certainly below profit maximizing levels. The Commission failed to fully appreciate the pricing complications that could result from the piggyback deregulation.

In addition to the distorted competitive opportunity experienced by trucking services, independent trucker participation in intermodal services is handicapped by barriers to access to rail ramp-to-ramp services from both direct exclusion and pricing penalties, as well as by the general burden of regulation. Motor carriers expressed concern in the exemption case over such discrimination by the railroads and their affiliated trucking operations. The Commission, however, considered these fears groundless, asserting that such market power abuses are unlikely in view of the competitive nature of the service and that truckers providing efficient connections would be able freely to compete with or join the railroads as business partners.⁵⁶ This outcome depends entirely, however, on the specific railroad involved since their approaches to TOFC are quite different. Some prefer to work with their own subsidiaries and others with independent operators, making the Commission's unsubstantiated assurance quite empty. It is unlikely that railroads with trucking operations will be consistently impartial between their own trucking subsidiaries and outsiders in selecting piggyback partners.

Pricing and access discrimination against independent truckers is explicitly charged in the oversight hearings on

the performance of the system under the provisions of the Staggers Act. Watkins Freight Lines testified that "The service we have received as a result of deregulation has greatly restricted Watkins' continued use of TOFC service."⁵⁷ A number of railroads have issued explicit rules declaring exempt TOFC service not to be a common carrier^{function} entitling them to refuse service at their discretion. According to American Trucking Associations testimony, this rule is often invoked.⁵⁸

In addition to the deleterious effects of discrimination, independent trucker TOFC participation is discouraged by the inflexibility of regulation which governs the total rate for the through movement from origin to destination unless carried on railroad owned trucks. The complication of mixed regulation (trucking) and deregulation (TOFC) has led to the virtual demise of Plan V piggyback, representing the joint action of railroads and independent truckers.

The penalties of discrimination are not confined to individual trucking firms but extend to the entire system as a loss of operating efficiency. The implicit suppression of competition reduces the pressure of optimum performance by all market participants.⁵⁹ In addition, a true test of the best organization of TOFC operations is thwarted and occasions for superior system design involving independent truckers are missed. There are further unfavorable implications for equipment utilization associated with unbalanced

traffic flows. With railroads operating truck and TOFC services dissociated from total trailer movements, opportunities for reducing joint costs reflected in empty equipment return may be lost. The amount of empty backhauls and thus the total supply of equipment required to provide a given service volume may be minimized more effectively if all of the trailers involved in the round-trip movements in a corridor are brought into an effective pool.⁶⁰

In a still pending extension of the exemption proceeding, the Commission has proposed deregulating the associated truck transportation by railroad owned subsidiaries and to an uncertain extent by independent motor carriers.⁶¹ An affirmative ruling would cover the railroad trucking subsidiaries but it is presently uncertain whether it would also include all independent trucking or only that portion involving their employment as railroad agents. Subjecting railroad TOFC operations to a full market test as well as equalizing competitive opportunities requires the exemption of all independent trucking services associated with TOFC. This exemption is clearly warranted regardless of the ultimate form and degree of trucking entry control. It would provide the maximum incentive for the establishment of coordinated services by both truckers and railroads. It would further maximize competition on broad array of fronts, inducing that between railroads for the through TOFC services as they can tap hinterlands to the economic margin, between trucker-designed and railroad-designed TOFC

services, and between motor carrier or railroad organized TOFC and straight trucking.

Achieving this competitive objective in a generally deregulated environment would, however, require tightening of regulation in one important respect. Ramp-to-ramp services must be available to all users under the terms of an enforced common carrier obligation. Furthermore, the charges imposed on outsiders for these services must be consistent with those available under the internal TOFC arrangements of railroads and their trucking activities. It is not certain that the rail and trucking operations would deal with each other at arms length and regulatory precautions are warranted. The rates must be strictly cost based, which poses significant regulatory problems in view of railroad costing complexities. Under a full fledged piggyback system, however, it is likely that such specialized costs could be developed at least as readily as they presently are for unit coal trains. Instead of languishing, the traditional regulatory prohibition of discrimination against a connecting carrier should be rigorously enforced.

Conclusions

1. There are some details of trucking regulation that need to be resolved, with the evidence suggesting that little or no entry or rate control is required in this industry. The details of any residual regulation of the trucking

are in any case not of major intellectual or public policy concern.

2. Of far more intellectual and public policy interest are the implications of regulation for intermodal allocative efficiency. The key to this significant question lies in the details of railroad regulation. There is strong evidence of costly intermodal interface failures induced by regulation.

Footnotes

1. Motor Carrier Act of 1980, Public Law No. 96-296 (1980).
2. Staggers Rail Act of 1980, Public Law No. 96-448 (1980).
3. Railroad Revitalization and Regulatory Reform Act, Public Law No. 94-210 (1976).
4. See, for example, Donald V. Harper, "Consequences of Reform of Federal Economic Regulation of the Motor Trucking Industry," Transportation Journal, Summer 1982, pp. 35-58.
5. Particular reference is made to discussions with David Paxson, Director, American Truck Dealers Division of the National Automobile Dealers Association.
6. The trucker contention that pricing is predatory and discriminatory is documented in Petition for Declaratory Order--Lawfulness of Volume Discount Rates by Motor Common Carriers of Property, 365 I.C.C. 711 (1982).
7. Information regarding I.C.C. operating authority activity was developed in an interview with Howell Sporn of the Office of Proceedings, I.C.C.
8. There are now very few of these applications which once numbered 5,000 annually.
9. Information regarding I.C.C. rate activity was developed from an interview with Howell Sporn of the Office of Proceedings, I.C.C. According to I.C.C. data, of the 134,145 tariffs filed during the first quarter fiscal 1982, only 11 were suspended and just one ^{was} actually investigated.
10. This matter is being considered in conjunction with the broad inquiry into motor carrier pricing designated as Ex Parte No. MC-166, Pricing Practices of Motor Common Carriers of Property Since the Motor Carrier Act of 1980.
11. A persuasive critique of the Motor Carrier Act of 1980 identifies residual regulations which are unnecessary and harmful. See Bruce Allen, "Need for Future Regulatory Reform of Rail and Motor Carrier Industries," Transportation Research Record 804 (1981), pp.42-47.

12. Ex Parte No. MCC-122 (Sub - No. 2), Lease of Equipment and Drivers to Private Carriers (mimeo.), decided February 9, 1982.
13. Ex Parte No. MC-43 (Sub-No.12), Leasing Rules Modification (mimeo.), decided November 29, 1982. This decision will ~~also~~ undoubtedly be appealed in the Federal courts.
14. For a detailed discussion of these relationships, see Merrill J. Roberts and Thomas M. Corsi, Regulatory Change: Experimentation in Motor Carrier Entry Control, National Transportation Policy Study Commission, Working Paper No. 11. (National Technical Information Service), May, 1979.
15. A response to the need for advanced information processing in connection with rate proliferation is in Traffic World, November 29, 1982, p.67.
16. The brokerage boom is the subject of an article in Traffic World, November 1, 1982, p. 103.
17. See, for example, a statement on the Chairman's views in Traffic World, December 20, 1982, pp. 27, 64.
18. Reported in Highway Common Carrier Newsletter, No. 836, October 4, 1982, p. 1. See also Traffic World, September 27, 1982, pp. 105-07.
19. Some studies do not detect railroad scale economies. Those commonly cited include G. H. Borts, "The Estimation of Rail Cost Functions," Econometrica, January, 1960, pp. 108-31; Z. Grilliches, "Cost Allocation in Railroad Regulation," Bell Journal of Economics, Spring 1972, pp. 26-41; A. F. Friedlaender and R. H. Spady, Freight Transport Regulation: Equity, Efficiency, and Competition in the Rail and Trucking Industries, M.I.T. Press, 1981), p. 31. However, Grilliches, as well as others, notes a major qualification to these indications pointing out that findings of constant returns to scale do not rule out decreasing average costs for some traffic. He observes that the traditional studies "ask the question what will happen to average costs if total traffic is expanded on the average in the same proportion...", which is not the case. Z. Grilliches, Notes on Railroad Cost Studies, University of Chicago, Center for Mathematical Studies in Business and Economics, June, 1969, p.30.
20. See R. D. Willig, "Multiproduct Technology and Market Structure," American Economic Review, May, 1979, pp. 346-51.

21. Section 10701a (b) (3) of Title 49, U.S. Code provides that "In determining whether a rate established by a rail carrier is reasonable for purposes of this section, the Commission shall recognize the policy of this title that rail carriers shall earn adequate revenues, as established by the Commission under Section 10704 (a) (2) of this title."
22. See especially the Staggers Rail Act policy statement, Section 10101a of Title 49, U.S. Code.
23. Section 10709 (a) and (d) of Title 49, U.S. Code.
24. Section 10709 (d) (2) of Title 49, U.S. Code.
25. Ex Parte No. 347 (Sub-No. 1), Coal Rate Guidelines--Nationwide, 364 I.C.C. 360 (1980).
26. In regulatory terms this dictum is expressed as covering "going concern value", a concept to be defined and measured by the I.C.C.
27. See, for example, Verified Statement in Ex Parte No. 347 of Robert L. Banks on behalf of the Western Coal Traffic League and the Consumer Owned Power Coalition.
28. I.C.C., Ex Parte No. 399, "Cost Recovery Percentage," 46 Fed. Reg. 20794-99 (April 7, 1981).
29. See Verified Statement of George H. Borts in Ex Parte No. 347, op. cit., p. 21.
30. Section 10707a (e) (2) (c) of Title 49, U.S. Code.
31. Ex Parte No. 347 (Sub-No. 1), Coal Rate Guidelines--Nationwide (mimeo.) served December 16, 1981, p. 7.
32. I.C.C. Docket No. 38754, Arkansas Power and Light Co., et. al., Petition to Institute Rulemaking Proceeding--Implementation of Long-Canon Amendment to the Staggers Rail Act, served September 3, 1982.
33. Ibid., p. 7.
34. See Cost Standards for Railway Rates, x
35. I.C.C. Docket No. 38754, op. cit., p. 8.
36. Alfred E. Kahn, Verified Statement in I.C.C. Ex Parte No. 347, op. cit., p. 14.
37. Interstate Commerce Commission, ICC81: 1981 Annual Report, pp. 33-36. Furthermore, compensatory measurements are not determined by company so rate profit

margins do not reflect the the divisions which are relevant for surcharges.

39. For example, railroads are forbidden "to own, operate, control or have an interest in a water common carrier or vessel carrying property or passengers on a water route with which it does or may compete for traffic. Sec. 11321, Title 49, U.S. Code (1979). In trucking case, "When a rail carrier, or a person controlled by or affiliated with a rail carrier, is an applicant and the transaction involves another carrier, the Commission may approve and authorize the transaction only if it finds that the transaction is consistent with the public interest, will enable the rail carrier to use motor carrier transportation to the public advantage in its operations, and will not unreasonably restrain competition." Section 11244(c), Title 49, U.S. Code (1979). The I.C.C.'s interpretation of the general guidelines is, of course, crucial.
40. This doctrine was enunciated in a number of early cases, including Santa Fe Transportation Co.--Purchase, P.R. Rex, 5 M.C.C. 4(1937).
41. The Commission also frequently employed a "key point" restriction in combination with or in lieu of the prior or subsequent rail haul requirement under which a shipment may not be transported by railroad trucking operations to, between, or through any listed major rail-line points. The key point concept is elaborated in New York Central Transport Co., 89 M.C.C. 389 among numerous other cases.
42. The railroads have continually pressed for the elimination of the restrictions to permit full fledged trucking operations, with truckers and water carriers violently opposed. Academic economists and others have participated in both sides of the debate over proposals for "common ownership" or freedom to form "transportation companies". The advocates of multimodal companies stress managerial economies, rational traffic and investment allocations among modes, and the implementation of intermodal services. Opponents fear railroad dominance, with the suppression of the other modes and associated unfavorable effects on intermodal competition. The literature is extensive. Favoring common ownership is Stanley Hille and James Suelflow, "The Transportation Company: An Economic Argument for Intermodal Ownership," Land Economics, Vol. 46, August, 1970, pp. 275-86. Opposition is expressed in Peter S. Douglas, "The Economic Irrelevance of 'Common Ownership'", I.C.C. Practitioners' Journal, Vol. 36, July-

August 1969, pp. 1794-1800. For an elaboration of the pros and cons see Merrill J. Roberts, Motor Carrier Entry Control Modification: Railroad Trucking Restrictions and Common Ownership, National Transportation Policy Study Commission (National Technical Information Service), February, 1978.

43. Ex Parte MC-156, Applications for Motor Carrier Operating Authority by Railroads and Rail Affiliates, 132 MCC 978 (January, 1983).
44. Harvey M. Romoff, "Multimodal Ownership in Transportation: A Canadian Perspective," in Clinton H. Whitehurst, ed., Forming Multimodal Transportation Companies: Barriers, Benefits, and Problems (American Enterprise Institute, 1978), pp. 57-69, esp. pp. 64-67.
45. Ibid., p. 67.
46. These and related arguments are more fully developed in James P. Thrasher, "Intermodal--Railroading's Huge Opportunity," Modern Railroads, July 1982, pp. 33-38.
47. For an elaboration of this point see Merrill J. Roberts, "Coordination and Distribution Efficiency," Journal of Transport Economics and Policy, May 1969.
48. Ex Parte No. 230 (Sub-No.5), Improvement of TOFC/COFC Regulation, 364 I.C.C. 731 (1981).
49. For I.C.C. observations regarding its exemption discretion under the Staggers Rail Act see Ex Parte No. 230 (Sub-No. 5), op. cit. 364 I.C.C. 391, 392-93, (1981).
50. The special TOFC exemption provisions of the Staggers Rail Act are in Section 10505 (f) of Title 49, U.S. Code (1980).
51. Ex Parte No. 230 (Sub-No.5), 364 I.C.C. 391, op. cit., p. 393.
52. See Standard & Poor's, Industry Surveys, "Trucking", December 31, 1981, pp. T142-43; Traffic World, July 19, 1982, pp. 17-19; Journal of Commerce, July 17, 1982, pp. 13c, 16c.
53. Ex Parte No. 230 (Sub-No. 5), 364 I.C.C. 731, op. cit., p. 732.
54. Ernest W. Williams, Jr., "A Critique of the Staggers Rail Act of 1980", paper presented before the Transportation and Public Utilities Group, American Economic Association, Washington, D.C., December 28, 1981 (mimeo), p. 22.

55. Alfred E. Kahn, The Economics of Regulation: Principles and Institutions, Vol. 2 Institutional Issues (John Wiley and Sons, 1971), pp. 223-24.
56. Ex Parte No. 230 (Sub-No. 5), 364 I.C.C. 391, op. cit., p. 394.
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59. Inconsistently, the roots of regulatory reform were in the expansion of competitive pressures.
60. The economic relationships involved are discussed in detail in Merrill J. Roberts and Thomas M. Corsi, op. cit.,
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**"WHAT HAVE BEEN THE EFFECTS OF
DEREGULATION ON THE INTERCITY
BUS INDUSTRY IN FLORIDA?"**

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In 1914 Pennsylvania became the first state to regulate passenger bus operations and by 1938 all states had some form of regulation. Federal regulation of the intercity bus industry commenced in 1935 with the passage of the Motor Carrier Act. Today approximately 750 regular route and charter carriers are classified as interstate carriers subject to economic regulation by the Interstate Commerce Commission (ICC). The ICC regulates entry and exit of the industry, fares, adequacy of service, mergers, and the issuance of securities. Most states regulate intrastate services in the same areas.

Florida was the first state to deregulate common carrier transportation on July 1, 1980. Although deregulation came about because of an effective "sunset" law, the results were still the same - total deregulation. After two years what has been the impact? Have the fears of those opposed to deregulation materialized in Florida? Have rural communities lost service? Are the new operators providing service with safe equipment and properly trained drivers? How have fares changed? Has the industry adopted new marketing strategies? Are new carriers "skimming the cream" by operating in the lucrative markets?

The Pros, Cons, and Fears of Deregulation

As with anything, there are arguments for both sides of the intercity bus deregulation issue. The proponents of deregulation argue that carriers, shippers and passengers are restricted by government regulations which stifle competition, discourage innovation, and foster inefficiency. They claim the current system is inequitable and unable to cope with contemporary transportation problems. Regulation is said to misplace incentive with disincentive, distort competitive advantages, protect inefficient carriers, artificially inflate rates, and misallocate scarce resources.

Proponents of regulation, however, argue that common carriers need regulatory restraints to operate effectively in both profitable and unprofitable areas. They argue that small communities would lose service under deregulation. They further argue that market forces in a competitive situation would lead to insufficient investment of capital. Substantial transition costs are another argument in favor of continuing regulation. There are in addition, concerns for safety; the sufficiency of antitrust laws to control abuses of economic power; and industry concentration which would result in higher fares and less service, particularly in lower density areas.

Florida Regulation

Prior to July 1, 1980 Florida had regulated the intercity bus industry for 50 years in a scheme similar to that of the I.C.C. Any operation of intrastate bus service required a certificate of public convenience and necessity which was acquired by application to the Florida Public Service Commission (PSC). No certificate was issued

for a territory for which a certificate already existed unless the PSC determined the existing service was inadequate.

Certificate holders were required to show evidence of public liability, property and cargo insurance coverage, and pay fees for certain applications of tariff filings. Fixed route carriers could not change, suspend or discontinue service without prior written approval of the PSC. The PSC had rules governing schedules, vehicle capacity and seating requirements, baggage handling, station standards, specified times for rest and meal stops, charged licensing fees, and required periodic financial reporting of the carriers.

Charter rights were granted only in conjunction with the grant of a regular route certificate. Charters were required to originate only at a point authorized on the regular route, or at points not served by another carrier.

In the days before July 1, 1980 the Committee on Governmental Operations of the Florida House of Representatives argued long and hard over the issue of regulation. The pressure applied by the Regulatory Reform Act of 1976, better known as the "Sunset Act", placed more emphasis on the debate. The Committee was convinced the arguments for regulation were ill-advised. It determined the public would benefit significantly more from a competitive motor carrier industry.

The Committee, in analyzing its actions issued the following statement:

"In applying the criteria of sunset review, the Committee concluded that proponents of the traditional form of entry and rate regulation of Florida motor carriers had not carried their burden of proof as to the need for such regulation. They found that the

absence of regulation would not significantly harm or endanger the public and doubted whether all facets of the regulatory process were designed for, and had as their primary effect, the protection of the public. The Committee identified significant costs associated with the regulation scheme employed, and found that these costs were not justified by the harm which could result from the absence of regulation.....In conclusion, the Committee felt that the motor carrier reform would not deny carriers a livelihood, but would only require of them that they operate efficiently and be responsive to the requirements of the consumers of their services." (1).

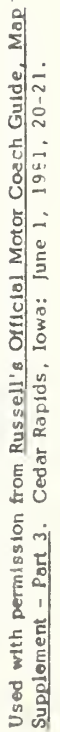
Deregulation and Its Impact on Florida

Imagine an industry with hundreds of millions of dollars in annual revenues without control over its prices, an industry that operates as a monopoly in some markets without freedom to choose its markets, an industry whose product must always be available to the public as advertised at a fixed price without stockouts, and an industry that cannot modify its products without governmental approval. Now imagine changing the rules overnight and allowing the industry to set its own prices, choose its markets, and adjust its products to meet demand. Deregulation in Florida had this effect on the intercity bus industry.

At 12:01 AM, July 1, 1980, most motor carrier operators in Florida were shocked to learn they had total freedom in operating their services when they wanted, where they wanted, and in terms of pricing, how much they wanted to charge. There was free entry and exit to the intercity bus industry, with no State control on service, fares, routes, insurance or safety.

Changes in Regular Route and Charter Services

In examining Figure 1, a map depicting intercity bus service within the state of Florida, one can gain an overall picture of



service patterns before deregulation. Contrasting late April of 1980 with 1981, Greyhound added 12,859 miles of scheduled service weekly and Trailways added 15,698. (2) Most regular route carriers have increased scheduled service since July 1, 1980. Gulf Coast Motor Lines terminated service between Tampa, Clearwater, and St. Petersburg to concentrate on charter and tour operations. Both Greyhound and Trailways subsequently stepped in to provide new service to Clearwater. (3)

Table 1, summarizes the routes that were abandoned by the various carriers. The route with the largest number of daily round trips was between New Port Richey-Tampa and was served by Gulf Coast Motor Lines. This service has been restored by both Greyhound and Trailways with a total of seven round trips daily. The other services range from one route with a maximum of three round trips daily between Gainesville-Fanning Springs, to six routes with two round trips daily and several routes with only one round trip daily. Clearly, the majority of routes discontinued were receiving minimal service before deregulation.

The fear that deregulation would cause communities to lose service does not appear to have materialized. The communities that were affected with loss of service are indicated individually on Table 1. Most communities did not effectively lose all intercity bus service. Several of the communities listed were designated as "flag stops" only and did not have a scheduled time of departure or arrival.

A "flag stop" designation is generally shown on a schedule to indicate a community through which the route passes. It can be

TABLE 1

INTERCITY BUS ROUTES ABANDONED AS A RESULT OF DEREGULATION

<u>Timetables</u>	<u>Carrier</u>	<u>Route Termini</u>	<u>Communities Losing Scheduled Service</u>	<u>Daily Round Trips</u>
182	GLI	Bunnell-Daytona Beach	None @	2
8100A	TWYS	Panama City-Carrabelle-Tallahassee	Wakulla(f), Crawfordville, Sopchoppy(f), Carrabelle, Eastpoint, Apalachicola, Pt. St. Joe, Tyndall, AFB(f)	1
8092/8080	TWYS	Bunnell-Daytona Beach	None @	1
8095	TWYS	Panama City-Wewahitchka-Blountstown	Wewahitchka	1
8092	TWYS	Jacksonville-Gainesville	Middleburg(f), Keystone Hts., Melrose(f)	2
8092	TWYS	Lake City-Lake Butler-Gainesville	None @	0
198	GLI	Lake City-Lake Butler-Macclenny	Lake Butler	1
169	GLI	Gainesville-Fanning Springs	Newberry(f)(SST), Trenton(SST)	3
169	GLI	Chiefland-Bronson-Ocala	None @	1
169	GLI	Gainesville-Williston-Hernando	Williston(SST)	1
167	GLI	Wildwood-Leesburg	None @	1
190	GLI	Ocala-DeLand	Silver Springs, Juniper Springs(f)	1
169	GLI	Chiefland-Dunnellon	None @	1
167	GLI	Gainesville-Hawthorne-Ocala	None @	2
182	GLI	Kennedy Space Center-Titusville	Hawthorne(f), Island Grove(f), Citra(f)	1
165/175	GLI	Bartow-Winter Haven-Lake Wales	Kennedy Space Center(SSN)	2
2782 *	FLimo	Haines City-Orlando	Bartow(SST)	2
3537	Gulf	Tampa-Walt Disney World	None (SSG)(SST)	1
3537	Gulf	New Port Richey-Tampa	None (SSN)	1
175	GLI	Lake Placid-Clewiston	Holiday(f), Tarpon Springs, Dunedin(f), Clearwater(SSN), Oldsmar, Tampa Airport	8
8093	TWYS	LaBelle-Moore Haven-Clewiston	Moore Haven	1
8080	TWYS	Pahokee-Canal Point	Moore Haven	1
8080	TWYS	South Bay-Andytown	Canal Point(f) @	1
175	GLI	South Bay-Andytown	None @	0
187	GLI	Cocoa-Patrick AFB-Melbourne	None @	1
3537	Gulf	New Port Richey-Orlando	Cocoa Beach(SSN), Patrick AFB(SSN), Satellite Beach(SSN), Indian Harbor(SSN)	1
			Winter Garden(f)(SST), Clermont(SST), Groveland(f), Mascotte(f), Ridge Manor(f), Brooksville(SST), Weeki Wachee, Spring Hill, Hudson(f), Bayonet Pt. (f)	2
GLI	Greyhound Lines, Inc.			
TWYS	Trailways, Inc. and affiliated companies			
Gulf	Gulf Coast Motor Lines, Inc.			
FLimo	Florida Tour & Limo			
Space	Space Coast Shuttle Service			
*				

TWYS 15
GLT 16
Gulf 16
47 by routes (SSG) (SST)

NOTES

Communities still have intercity bus service by same carrier but not via same routing
Still served by Greyhound
Still served by Trailways, Inc.
Still served by new carrier
Flag stops only - no scheduled time

Started as new service after July 1, 1980 (deregulation) and subsequently abandoned

interpreted as an indication of very low demand for the service by the community. The point at which demand for service from a community justifies a specific time on a timetable however, is not clear-cut. It depends on the population of the community and the distance between time points. The ICC does require time points at all commission agencies.

The minor loss of bus service has not appreciably impacted the communities effected. The Florida Chamber of Commerce polled its members in the fall of 1981 and found that 44% believed bus deregulation had a positive effect on their communities; 8% thought it had a negative impact; and 48% saw no effect at all. A surprising finding was that most of the communities that lost service rarely knew they even had it before deregulation.

Table 2 summarizes the number of communities effected by service changes in the past several years. The first two columns are strictly changes that have occurred under regulation. The numbers in the last column, July 1980 to July 1981, appear rather drastic in comparison to the previous 11 year period. However, as indicated above several of these communities were merely removed from the schedule timetable because they were designated as a "flag stop". Greyhound had twenty communities so designated in its timetables. The bus in many cases still actually serves the community and can be stopped ("flagged") by a passenger on the side of the road for boarding or by a passenger on board for alighting.

Table 2: Comparison of Changes in Number of Communities Served

<u>Effect on Florida Communities</u>	<u>July 1970-1979</u>	<u>July 1979-1980</u>	<u>July 1980-1981</u>
Lost Carrier	44	3	26
Lost All Service	96	4	80
New Carrier Service	66	9	76
Lost Scheduled Trips	184	16	64
Added Scheduled Trips	59	16	43

Eliminating the 22 communities indicated as "flag stops" from the 80 shown in Table 2 results in only 58 communities having "Lost All Service" since deregulation. Many of the communities no longer served are within a reasonable distance of a community still served. The "worst case" is a distance of only 28 miles.

Greyhound dropped 37 communities from its timetables. The total population of these communities is 35,000 people. This is an average population of 950 persons per community. Greyhound added the communities of Clearwater, Ft. Walton Beach, and New Port Richey for a total combined population of 106,000, or over 35,000 per community. This average figure for each new community served is equal to the total population of the 37 communities dropped from the schedules, but not necessarily dropped from service. The total annual sales for 1980 in the communities that are no longer listed by Greyhound amounted to less than \$100,000.

Table 3 shows all of the new routes that have been added within the state since July 1980. As can be readily seen by the number of daily round trips, the new services are far more significant than the routes that were abandoned. Most of the communities that are receiving new service are receiving additional service as shown by the "Already Served" designation. The service provided by Space Coach

TABLE 3

NEW INTERCITY BUS ROUTES AS A RESULT OF DEREGULATION

Timetable	Carrier	Route Termini	New Communities Served	Daily Round Trips
8095	TWYS	Tallahassee-Lake City-Jacksonville	Live Oak(1RT)(ASG), Lake City(1RT)(AST)(ASG)	1
8101	TWYS	GA-Lake City-Gainesville-Ocala-Orlando	Jasper(1RT)(ASG), Lake City(ASG)(ASG), Gainesville(ASG)(AST), Ocala(6RT)(ASG), Belleview(f)(4RT), Leesburg(4RT)(ASG), Clermont(4RT)(ASG)(AST), Winter Garden(f)(ASG), Orlando(4RT)(ASG)(AST)	3
8080	TWYS	Jacksonville-Gainesville	Starke(f)(2RT)(ASG)	2
3536 *	Space	Titusville-Kennedy Space Center	Kennedy Space Center	1
3537 *	Gulf	Tampa-Walt Disney World	Plant City(ASG)(AST)(4RT), Lakeland(ASG)(AST)(6RT), Winter Haven(4RT)(ASG), Haines City(1RT)(ASG)(AST), Circus World(1RT), Hyatt World(1RT)(ASG), Walt Disney World(ASG)(2RT), Sea World(1RT)(ASG)	4
2782 *	FLimo	Orlando-Haines City	Haines City(ASG)(AST)	1
8080	TWYS	St. Augustine-West Palm Beach	Daytona Beach(ASG)(AST), Titusville(ASG), Cocoa(ASG), Melbourne(ASG), Ft. Pierce(ASG)	1
2782	FLimo	Ft. Pierce-Orlando	Cocoa(ASG), Merritt Island(ASG), Cocoa Beach(ASG), Patrick AFB(ASG), Satellite Beach(ASG), Indian Harbor(ASG), Rockledge(1RT), Melbourne(ASG), Palm Bay, Malabar, Sebastian(ASG), Wabasso(f), Vero Beach(ASG), Indio(2RT)(f)	5
8080/8095	TWYS	Ocala-Hernando	None	3
168	GLI	Homosassa Spgs.-Clearwater-St. Petersburg	New Port Richey(ASGulf), Clearwater(ASGulf)	3
170	GLI	Tampa-Clearwater	Clearwater(ASGulf)	4
8092	TWYS	Tampa-Clearwater	Clearwater(ASGulf)	2
77285	TWYS	Bartow/Auburndale-Lake Placid	Lake Placid(1RT)(ASG), Sebring(ASG), Avon Park(ASG), Frostproof(1RT)(ASG), Lake Wales(ASG), Winter Haven(ASG), Auburndale(1RT)(f)(ASG)(AST), Lakeland(1RT)(ASG)(AST), Circus World(1RT), Disney World(1RT)(ASG), Sea World(1RT)(ASG), Orlando International Airport	2
GLI	Grayhound Lines, Inc.		(#RT) Number of round trips serving community	
TWYS	Trailways, Ind. and affiliated companies		(ASG) Already served by Greyhound Lines	
Gulf	Gulf Coast Motor Lines, Inc.		(AST) Already served by Trailways	
FLimo	Florida Tour & Limo		(ASGulf) Already served by Gulf Coast Motor Lines	
Space	Space Coast Shuttle Service		(f) Flag stop	
*		Started as new service after July 1, 1980 (deregulation) and subsequently abandoned		

Shuttle Service between Titusville and Kennedy Space Center is a duplication of a route abandoned by Greyhound. Florida Tour & Limo is a new carrier that also moved in to take over service that was abandoned by Greyhound. Trailways replaced Greyhound's service between Bartow/Auburndale-Lake Placid.

The effect of the ICC on route structure in Florida cannot be forgotten. All interstate travel remains strictly regulated by the ICC. Several routes must continue to be operated within Florida for their interstate deviation rights.

Florida is a very tourist oriented state, requiring a high level of charter service. Prior to deregulation the PSC indicated that adequate charter services did not exist. (4) Now there are as many as 30 new operators, mostly small in size and mostly subsidiaries of established carriers in the Northeast. The attraction of an unrestricted market place, the large number of tourists in Florida and the small demand for charter service in their home states during the winter season was hard to resist.

Changes in Service Frequency

Table 4 shows the number of daily round trips between major city pairs for four periods of time. During the five month period following deregulation, Greyhound increased its number of round trips in 8 of the 13 corridors and reduced service in only 3. Trailways increased service in 5 and reduced service in 2. Between November 1980 and July 1981 Greyhound increased service in 6 of the corridors and reduced service in 2, while Trailways reduced service in 2 of the corridors and increased service in none. Between July 1981 and

TABLE 4

NUMBER OF DAILY ROUND TRIP BETWEEN MAJOR CITY PAIRS

	June, 1980 GLI TWYS	Nov., 1980 GLI TWYS	July, 1981 GLI TWYS	Nov., 1981 GLI TWYS	July, 1982 GLI TWYS	Timetables GLI TWYS
Tallahassee-Pensacola	6 4	8 4	8 4	8 4	8 4	198 8095
Tallahassee-Jacksonville	6 0	7 1	7 1	6 0	6 0	198 8095
Tallahassee-Tampa	4 6	5 6	4 5	4 5	4 5	169/ 8095 168
Jacksonville-Gainesville	3 2	5 2	5 2	4 2	4 2	167 8092/ 8080
Jacksonville-Tampa	3 5	5 6	5 6	4 5	4 4	167 8092/ 8080
Jacksonville-Orlando	14 9	12 8	14 8	13 7	13 6	165 8080
Jacksonville-Miami	14 6	14 6	17 6	14 4	12 4	182 8080
Miami-Key West	6 0	7 0	5 0	5 0	3 0	180 -
Miami-Tampa	3 6	3 5	4 5	3 5	7 4	175 8095
Miami-Orlando	7 6	6 8	8 8	9 7	9 6	182 8080
Orlando-Tampa	11 3	9 4	9 4	9 3	9 3	165 8092/ 8080
Miami-West Palm Beach	16 4	17 8	19 7	17 7	19 6	181 8080
Miami-Daytona Beach	9 4	10 4	11 4	10 3	10 4	182 8080

November 1981, Greyhound increased service in 1 corridor and reduced service in 8, while Trailways increased service in no corridors and reduced service in 7. In the final period examined, Greyhound increased service in one corridor and reduced service in two, while Trailways increased service in one and reduced service in five corridors.

Generally it appears that Greyhound took advantage of deregulation by expanding the number of round trips between key city pairs. It continued to expand that service through July 1981. Due to an overall reduction in demand for intercity bus service and the generally slack period of demand during the Fall of the year, both carriers reduced service between July and November of 1981. In addition, Florida Tour & Limo eliminated an Orlando-Melbourne round trip and a Ft. Pierce-Vero Beach round trip effective July 1981.

Trailways eliminated a Miami-Orlando round trip and a southbound East Coast Jacksonville-Miami trip, also effective July 1981. It eliminated all service from Jacksonville to Pensacola at the same time. Trailways claims deregulation cut into its charter bus market by allowing more bus companies into the market. Trailways further indicates that profits from charter service helped to subsidize the less profitable regular runs. (5)

In September 1981 Trailways was seeking a wage freeze and a reduction in the amount of cost of living increases. The company wanted to cut pay by changing its employees to hourly wages instead of wages based on the number of miles driven. It indicated that the average full-time union driver earned approximately \$20,000 per year.

Trailways drastically reduced service in Florida on October 1, 1981. It reduced five round trips daily between Tampa and Miami to only two. Other service reductions included Tallahassee-Tampa (5 to 1), Jacksonville-Gainesville (from 2 to 1), Jacksonville-Orlando (from 7 to 2) and Miami-Orlando (from 7 to 2). Forty percent of its drivers were laid off. The depressed state of the transportation industry and the economy were given as reasons for the reductions. Reinstatement of most of the above service on December 14, 1981, however, indicates there may have been other reasons. (6)

Changes in Pricing Strategy

Table 5 presents the fares that were in effect for 13 key Florida markets for various periods of time for both Greyhound and Trailways. The base fare from February 23, 1979 was increased by the Florida Public Service Commission on June 1, 1980 by a fuel surcharge of 4.8%. The July 1 figures reflect a 5% fuel surcharge. On August 14 Greyhound established its fares at 10% above the fare in effect July 1, 1980. Trailways followed suit.

Greyhound increased an additional 10% on February 1981 another 10% April 1981, and an additional 10% April 1982, for a total of 46.4% since deregulation. Trailways followed an identical pattern. On a cents per mile basis the fares are now approximately 83% of the interstate fares. The ICC still regulates interstate fares in Florida, as well as interstate charter rates. This remains a barrier to a totally free market place.

The variation of price in terms of cents per mile between the various city pairs does not appear to be significant other than in

TABLE 5

ONE WAY FARES FOR GREYHOUND AND TRAILWAYS

	Feb. 23, 1979	June 1, 1980	July 1, 1980	Aug. 14, 1980	Feb. 3, 1981	April 1, 1981	April 1, 1982	Mileage	4/1/81 Cost Cents/Mile
Tallahassee-Pensacola	15.10	15.80	15.85	15.85	19.25	21.20	21.20	194	10.92
Tallahassee-Jacksonville	11.85	12.45	12.50	13.75	15.15	16.70	16.70	166	10.06
Tallahassee-Tampa	17.60	18.30	18.30	20.15	22.20	24.45	24.45	244	10.06
Jacksonville-Gainesville	5.25	5.50	5.50	6.10	6.75	7.45	7.45	72	10.35
Jacksonville-Tampa	14.60	15.30	15.35	16.90	18.60	20.50	20.50	194	10.57
Jacksonville-Orlando	10.85	11.35	11.40	12.55	13.85	15.25	15.25	140	10.89
Jacksonville-Miami	22.75	23.90	23.95	26.35	29.00	31.90	31.90	340	9.38
Miami-Key West	11.25	11.80	11.80	13.00	14.30	15.75	17.35	161	10.78
Miami-Tampa	19.55	20.40	20.40	22.35	24.60	27.10	27.10	250	10.84
Miami-Orlando	17.00	17.80	17.85	19.65	21.65	23.85	23.85	229	10.41
Orlando-Tampa	7.60	7.95	8.00	8.80	9.70	10.70	10.70	82	13.05
Miami-West Palm Beach	5.05	5.30	5.30	5.90	6.50	7.15	7.15	67	10.67
Miami-Daytona Beach	17.85	18.70	18.75	20.65	22.75	25.05	25.05	260	9.63

NOTE: The base fare was established February 23, 1979. The June 1, 1980 fares are base plus 4.8% fuel surcharge. The July 1, 1980 fares include a 5% fuel surcharge. The August fares went up 10% plus incorporated the fuel surcharge into the base fare.

the Orlando-Tampa corridor. It is not readily clear why the rate is 30% higher in this corridor other than it is a popular tourist corridor. An increase only in the Miami-Key West market of an additional 10% on October 1, 1981 presented the first case of truly selective pricing on the part of Greyhound. Greyhound appeared to be taking advantage of being the only bus carrier operating in this corridor. Subsequently a new carrier, Allstate Bus Lines, moved into the market January 1982. Allstate ceased serving this corridor, however, in June of this year.

Neither Greyhound nor Trailways experimented with pricing in Florida until June 1982. Promotional fares for new service were non-existent. It is unclear at this time whether either major company recognizes the advantages of the freedom to experiment with pricing in a deregulated environment.

Conclusions and Management Implications

Overall the intercity bus carriers seem to be adapting well to deregulation within the state of Florida. Very few new carriers have started regularly scheduled service, while the major carriers have refined their route networks serving the major cities. Service to small communities continues in the majority of the cases. The fears of deregulation do not appear to have developed. Deregulation seems to be a step in the right direction to a healthier intercity bus industry. As Alfred Kahn has stated, "An industry performs better when it must please its customers rather than government regulators."

The characteristic of a regulated industry in subsidizing low revenue areas with profits from high revenue areas are often over-

looked in analyzing the intercity bus industry. This form of self cross-subsidization is very real, and in the intercity bus industry it provides support for service to small communities. A precise definition of what "loss of service" entails, is required to clearly define impacts. A community that was merely listed on a timetable as a "flag stop" does not qualify as losing service when it is removed from the timetable.

Without detailed cost factors and revenues from passenger and package express service by route, it is not easy to determine if any unprofitable routes remain in operation at this time. Clearly if the loss of service that has been experienced is of concern to the government, the Florida legislature must wrestle with the development of a subsidy program. The question of whether "essential" service should be maintained, as with airline deregulation, would have to be addressed.

The industry structure has changed with an increase in the total number of carriers operating within the state of Florida in regularly scheduled intercity bus service. This development should have a long range positive benefit to the public. Although mergers are taking place in the charter segment of the bus industry and in the trucking industry, they do not appear to be apparent in the regular route segment of the intercity bus industry. Concentration within the industry should not be a problem because any exploitation by a carrier in a monopoly position will attract new entry, reducing concentration and increasing competition. (7)

Shifting from operating under regulation to a profit-maximizing organization will not be easy. Managers in a regulated environment develop a public utility mentality, emphasizing service for the good of the people and not necessarily the shareholders. A need has developed in the intercity bus industry almost instantaneously for professional business managers with emphasis on business administration, marketing, economics, and financial management. Accounting techniques must be changed to profit/loss type statements as opposed to regulatory accounting. Marketing was not required in a regulated environment but now becomes critical.

A shift to a profit-oriented line of economic analysis must take place. Decisions must now be based on trade-offs, cost/benefit analysis, opportunity cost, marginal analysis, operations research, and market research. The bus industry, as the air carriers have done, will have to know who their passengers are, where they want to go, how they want to go and how much they are willing to pay. Route planning, schedule planning, and fleet planning will be critical as carriers move in and out of markets more quickly.

Resources will have to be allocated carefully, requiring more extensive forecasting and planning. Fares will have to be flexible with special fares to increase load factors, dictating more complicated fare structures. The change in strategy necessary with deregulation is summarized well by Dan A. Colussy, President, Pan American Airlines: "In the past, the profitability of various airlines was often predetermined by their route structures and their legal and political expertise in gaining the best franchises from the

all powerful government regulators. In the future, managerial performance will be more important to the success of the airlines".

Survival in Florida may ultimately be based on a company's marketing strategy. Experimenting with prices in the various markets will be necessary. Without the protection of rate bureaus, carriers will have to establish individual pricing strategies. Greyhound appears to have been a price leader within the state. Trailways is beginning to experiment with prices and Greyhound is now following.

Congress has passed the intercity "Bus Regulatory Reform Act of 1982," which becomes law November 19, 1982. This law greatly modifies the existing control the I.C.C. and the states have over the industry. Arizona deregulated intercity buses July 1, 1982. Ohio experienced regulatory reform on August 20, 1982. On October 1, Wisconsin became the most recent state to deregulate.

Although Florida is geographically unique as a peninsula and is isolated from bordering states except to the north, examining the results after two years of deregulation can be useful to the other states. Alaska, Colorado, Montana and South Carolina have sunset laws that may result in deregulation July 1, 1983. The Florida experience so far has been positive. Perhaps more states will follow their example in the future.

FOOTNOTES

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ECONOMIC REGULATION AND SAFETY REGULATION

Those who support deregulation of transportation industries (airlines, trucks, buses) usually argue that economic and safety regulation are largely unrelated, and that safety is not compromised by an extremely competitive environment. Their argument is strengthened by methods of accident investigation which, of necessity, focus upon the most immediate causes of tragedy while overlooking the contributions of the policy environment. While nobody seeks to endanger public safety, it seems time to suggest that economic deregulation threatens safety unless deregulation is accompanied by large increases in safety enforcement budgets. This argument begins with the airline industry.

Last year's crash at Washington National Airport was a classic example of many factors coming together to produce a disaster when no single factor could itself have caused the accident. Now that the record is more complete, it is possible to indicate how deregulation probably contributed to the crash.

- The National Transportation Safety Board (NTSB) concluded that for one thing, the pilots were relatively inexperienced in winter weather flying conditions. Deregulation encouraged small airlines to expand very quickly into areas and airports with which their pilots were not intimately familiar. The pilots of such companies often are less experienced overall than those of older and unionized firms. Institutional experience often is undervalued, and it is very difficult to legislate in detail, but it is greatly enhanced when airlines operate on fixed routes for long periods of time.

- As the number of airlines using any one airport increases, they must increasingly share equipment, facilities, and people. This led in Washington to a serious lack of coordination between the flight crew and a second airline which de-iced the aircraft, especially since the second firm did not have maintenance manuals for a type of aircraft it does not operate. This outcome of half-baked cartelizing has long been a problem, but deregulation has made things worse, thereby threatening safety.

- Ever increasing pressure to cut costs apparently has led many airlines to over-emphasize the importance of avoiding the use of maximum engine power. When the NTSB concludes that pilots, as in Washington, hesitate to use full thrust even when needed, it is time to ask if price-cutting wars are in the public interest.

The case for the connection between all-out competition and declining safety does not rest upon any single accident. The seeds for the 1979 crash in Chicago, the worst in U. S. history, were planted when the airline, against the manufacturer's advice, used a cost-cutting procedure (removing each engine and supporting pylon in one operation instead of two) which led to fleet-wide deterioration not detected until post-accident investigation. The procedure was introduced before deregulation, but it should be recalled that the Civil Aeronautics Board had, from the mid-1970's, subjected airlines to increasing competitive pressure. In the early 1970's, for example, the three transcontinental carriers (American, TWA, United) had been permitted to agree among themselves to limit the number of flights, including those to Chicago, but this permission was withdrawn in 1975. Incessant pressure to cut costs can have the effect of distorting managerial judgment.

Even "success stories" can lead to the same conclusion. The safety record of commuter airlines has markedly improved since the NTSB singled them out for criticism in 1979. The principal reason for improvement, of course, has been a substantial increase in the enforcement activities of the Federal Aviation Administration (FAA), and this doubtless has had the effect of keeping commuter fares higher than they otherwise might have been. Unless the FAA has increased its overall budget, other activities have suffered. This may account for the FAA's distress when the NTSB pointed to sloppy FAA operations as the cause of last winter's crash in Boston. It seldom is noticed that as the number of firms in an accident-prone industry is increased, more and more safety inspectors are needed for effective enforcement. If safety is not to suffer, lower prices must be offset by higher government expenditures.

The airline industry's overall safety record is declining a bit, even if accidents are too few in number to permit reliance upon statistics alone. Yet it seems reasonable to conclude that competitive pressures, even if they can be linked only to a few accidents, are at least an indirect cause of a trend that is now worth noticing. This conclusion is reinforced when the analysis is shifted to other industries.

A large fraction of the trucking industry never was subjected to Interstate Commerce Commission economic regulation. While the industry is so scattered that data collection is difficult, the most extensive research (at Harvard) indicates that "exempt" truckers have long had much poorer safety records than regulated firms, including important safety-related factors such as habitual violation of driving-time limits (the 10-hour rule). In this industry, the Teamsters Union provides a classic example of a policy dilemma.

Few unions have been more involved in dubious activities, but a strong union undeniably contributes to improved safety. While data will be difficult to gather, especially state-by-state, logic suggests that a deregulated bus industry (expanding with second-hand buses) will have more accidents. The safety history of the coal industry follows the typical pattern so widely overlooked; the greater the number of firms, the worse the safety record. With small firms usually the worst violators, the American commitment to helping small business poses another dilemma.

In all such industries, safety always hangs in a delicate balance easily tipped by a new factor which has consequences not completely thought out beforehand. I suggest that the substitution of a broad for a narrow analysis leads to conclusions which challenge the conventional wisdom. In the absence of economic regulation, safety conditions deteriorate unless huge new sums are spent for enforcement. The overall costs of coordinated economic and safety regulation probably are less than those of safety regulation without economic regulation. The current trend toward economic deregulation and low-cost safety enforcement (at all levels of government) promises only disaster.



DEREGULATION'S IMPACT ON SELECTED
DISTRIBUTION ACTIVITIES*

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ABSTRACT

The purpose of this paper is to present selected results from an empirical research effort designed to identify the impact of transportation regulatory reform on certain critical areas of the distribution activities of shipping and receiving organizations. The results reported herein concern the impact on

1. the general level of rates paid for for-hire transport service,
2. the percentage division of traffic tonnage between modes and forms of carriage (common, contract, and private), and
3. the number of for-hire carriers actively competing for shipper patronage.

The data was gathered by means of a mail survey sent to 1,550 transportation/distribution professionals selected from the 1981 membership rosters of the American Society of Traffic and Transportation and the National Council of Physical Distribution Management. This paper is based upon a total of 378 useable responses obtained.

The percentage changes in the general level of rates reported by the respondents resulted in mean increases and decreases in excess of 10% for both common and contract carrier service. Motor carriage is the only mode to post an appreciable gain in the percentage of both inbound and outbound traffic tonnage between June 1980 and the first quarter of 1982, while common carriage was the only form to post a loss in the percentage of traffic tonnage moved both inbound and outbound. A majority of respondents reported increases, dramatic increases in some cases, in the number of common and contract carriers actively soliciting their traffic. Only 34 respondents reported a decrease in the number of common carriers competing for business, and only seven respondents indicated a decline in the number of contract carriers. A majority of the respondents, 84%, feel that deregulation has thus far worked to the advantage of their firms' distribution functions, and 88% believe that deregulation is directly or indirectly related to the changes they reported.

*This paper is similar to one presented at the 2nd Annual Arizona Transportation Research Workshop (TRW-2) and published in the TRW-2 Proceedings with one exception: the TRW-2 paper is based on 310 useable responses obtained as of May 7, 1982.

INTRODUCTION

The for-hire transportation sector of the U.S. economy possesses one of the longest, most controversial, and most complex public policy traditions of any business activity, particularly with respect to economic regulation. Its history can be traced back to the early 1800s. Its evolution from then to the 1970s was based upon the concept of the public utility; i.e., an essential public service. Formal legislative development of U.S. National Transportation Policy (N.T.P.) began with the Act to Regulate Commerce of 1887 and has accumulated at least 27 major pieces of legislation to date. The legislative development has been accompanied by numerous landmark Interstate Commerce Commission (I.C.C.), Civil Aeronautics Board (C.A.B.), and court decisions. The cumulative impact of court decisions, regulatory body decisions, and legislation produced a tradition of increasingly comprehensive and complex federal economic regulation of for-hire transport activity.

Controversy has also accompanied the evolution of regulatory policy from its very beginning. This continuing debate reached a crescendo in the mid-1970s, and beginning in November 1977, the industry and those it serves have been buffeted by a rapid succession of economic regulatory reform legislation. The first target of these reforms was air cargo. This was followed by the Airline Deregulation Act of 1978, the Motor Carrier Act of 1980, and the Staggers Rail Act of 1980. These Congressional enactments represent a dramatic reversal of the transportation regulatory tradition.

This policy reversal was precipitated by pressures emanating from a variety of sources. Among the more important of these was a growing public discontent with the federal government's increasing intervention in the private economy. The public's perception that such intervention tends to become counterproductive came to be shared by key political and policy making figures. Their perceptions were supported to varying degrees by studies produced by the U.S. Department of Transportation (D.O.T.), I.C.C., and C.A.B. which identified weaknesses in the regulatory structure. (1) These accumulated pressures resulted in the reform legislation cited in the preceding paragraph which collectively represent the most significant transportation policy events since the original Act to Regulate Commerce of 1887.

PURPOSE

The regulatory controversy is an enduring one. It can exist only because it is believed that the policy choice between varying degrees of regulation has a discernible impact on

- (1) the quantity and quality of for-hire transport services provided as well as the intensity of competition between modes and carriers for traffic and
- (2) the efficiency and effectiveness of the users' distribution functions.

Opponents of regulatory reform as it is now progressing have argued that instability and uncertainty in the provision of services will be the order of the day as a consequence of "cutthroat" competition precipitated by relaxed control over industry entrance and market exit, rates, and the routes operated.

Specifically, it is argued that such an environment will result in

- (1) large carriers driving their smaller competitors from the market by means of unfair competitive practices and superior resources,
- (2) greater industry concentration,
- (3) escalating rates supported by the power of an oligopolistic market structure and widespread localized monopolies,
- (4) abandonment of service to small shippers and communities, and
- (5) volatility and deterioration of carrier performance as a consequence of each of the above.

In contrast, advocates of deregulation, or regulatory reform, argue that the for-hire transportation industry is competitively structured, thus obviating the need for regulatory oversight and rendering it counterproductive. The following specific arguments are based on this fundamental contention.

- (1) Economic barriers to entry into motor carriage are negligible. This is significant in view of the fact that this mode accounts for the movement of the largest single percentage of total U.S. domestic freight tonnage. (2)
- (2) The superior flexibility of motor carriage in terms of the geographic scope of its coverage and its versatility in terms of the variety of traffic it can haul makes it a sufficient competitive threat to the other four transport modes to ensure adequate performance over the long run.
- (3) Users have the option of dealing through intermediaries such as freight forwarders and shippers' cooperatives. The ultimate recourse is to private transport.
- (4) Even if deregulation results in the concentration of multi-regional or nationwide service in a few large carriers in each mode, there is no reason to doubt that small, specialized carriers in terms of area coverage and/or types of service will develop to relieve inadequacies in the system, particularly with respect to small users and communities.

The purpose of this paper is to identify the actual impact which transportation deregulation, or regulatory reform, has had to date. Specifically, this paper presents certain results of an empirical research effort designed to identify the affects of recent reforms on selected aspects of the distribution activities of shipping and receiving organizations. The focus is upon shippers' and receivers' perceptions of the impact on

- (1) rates which they pay for for-hire transport service,
- (2) the number and types of carriers (common and contract) actively competing for their patronage,
- (3) the percentage division of their traffic by tonnage between modes, and
- (4) the percentage division of their traffic by tonnage between types of carriage (common, contract, and/or private).

METHODOLOGY

The research upon which this paper is based employed a survey consisting of 12 multiple-part questions designed to elicit both quantitative and

qualitative data concerning the impacts of regulatory reform. Each question was constructed in such a manner as to maximize response rate and eliminate common questionnaire pitfalls; e.g., leading, ambiguous, and non-specific questions, and questions suffering from restrictive phraseology. Additionally, set and halo responses were minimized by randomizing the ends of the scale and varying question format.

The survey was mailed over the period of 4-11 January 1982 to 1,550 individuals listed as holding transportation/distribution responsibilities with their respective firms in the 1981 membership rosters of the American Society of Traffic and Transportation (A.S.T.&T.) and the National Council of Physical Distribution Management (N.C.P.D.M.). All for-hire carriers and strictly service organizations; e.g., management consulting firms, were eliminated from the mailing list.

Each survey was accompanied by a cover letter explaining the purpose of the questionnaire and requesting its anonymous completion. A self-addressed standard business reply envelope was provided for the respondent's convenience. In order to maximize the response rate, approximately 700 names were randomly selected from the mailing list and contacted by telephone to alert them that they would be receiving the survey and to request their cooperation in responding to it. No other information was provided to them via the telephone contact in order to ensure that subjective bias was precluded.

This paper is based upon a total of 378 useable responses obtained. The data from these responses were analyzed using the Statistical Package for the Social Sciences.

Limitations

As is the case with many research projects, particularly empirical ones, the present effort is constrained by time and money. The particular methodology used in this case, a mail survey, poses additional constraints. In developing the survey instrument, the authors focused on soliciting the type of information which would provide a macro perspective on deregulation's impact. The survey was edited repeatedly and pretested before being mailed.

There is a great deal of important information which the authors would very much have liked to obtain which would have provided greater insight into the consequences of recent reforms. Acquiring such data, however, would have required a questionnaire of such a length as to seriously jeopardize an adequate response rate. One of the cardinal principles in conducting a survey via the mail is that it be as brief and simple as possible. This means that only that information which is absolutely essential to the research objectives can be solicited. The survey used to conduct this research was constructed on the basis of this criterion.

DEREGULATION'S IMPACT: THE USER'S PERSPECTIVE

Demographics

Table I depicts the types of business activities in which the 378 respondents are engaged. While many pursue more than one line of business, a majority,

315, or 83.3%, are involved in some form of manufacturing. Approximately 83% of the respondents indicated that all or most of the facilities (manufacturing plants, distribution centers, and/or warehouses) over which their transportation/distribution decision making authority extends are located within commercial transportation zones.

TABLE I
TYPES OF BUSINESS ACTIVITIES IN WHICH
SURVEY RESPONDENTS ARE ENGAGED

Activity	No. & (%) of 378 Respondents	Activity	No. & (%) of 378 Respondents
Manufacturing	315 (83.3)	Forestry	12 (3.2)
Wholesale Trade	83 (22.0)	Construction	11 (2.9)
Retail Trade	63 (16.7)	Fishing	3 (.8)
Transportation	36 (9.5)	Public Utility	1 (.3)
Agriculture	23 (6.1)	Other	16 (4.2)
Mining	18 (4.8)		

Table II depicts the relative size distribution of responding firms on the basis of their sales volumes for their most recent operating periods. The smallest reported sales volume was \$125,000, the largest over \$10,000,000,000. The typical respondent among the 328 reporting this information had a sales volume of \$358,600,000. Table III depicts the relative size distribution of the respondents in terms of their total annual average transportation costs. The smallest figure reported was \$4,500, while the largest was just over \$2,500,000,000. The typical respondent among the 318 providing this information expends \$12,090,000 annually on transportation.

TABLE II
RELATIVE SIZE DISTRIBUTION OF SURVEY RESPONDENTS
AS MEASURED BY SALES VOLUMES FOR MOST
RECENT OPERATING PERIODS*

Sales Volume	No. & (%) of 378 Respondents	Sales Volume	No. & (%) of 378 Respondents
\$1- 50,000,000	51 (13.5)	\$ 300,000,001- 500,000,000	34 (9.0)
50,000,001- 100,000,000	38 (10.1)	500,000,001- 1,000,000,000	40 (10.6)
100,000,001 200,000,000	53 (14.0)	1,000,000,001- 5,000,000,000	58 (15.3)
200,000,001- 300,000,000	32 (8.5)	over 5,000,000,000	22 (5.8)

*50, or 13.2%, of the 378 respondents declined to report this information.

TABLE III
TOTAL ANNUAL AVERAGE TRANSPORTATION COSTS
REPORTED BY RESPONDENTS*

Transport Costs	No. & (%) of 378 Respondents		Transport Costs	No. & (%) of 378 Respondents	
\$1-1,000,000	39	(10.3)	\$10,000,001- 15,000,000	30	(07.9)
1,000,001- 4,000,000	55	(14.6)	15,000,001- 30,000,000	44	(11.6)
4,000,001- 7,000,000	41	(10.8)	30,000,001- 100,000,000	47	(12.4)
7,000,000 10,000,000	27	(7.1)	over 100,000,000	35	(09.2)
60, or 15.9%, of the 378 respondents declined to report this information.					

Rates

Aside from the potential impact on small shippers and communities, the single most controversial issue surrounding regulatory reform was and is its affect on rates. Opponents and advocates of the present reforms were in accord in anticipating a discernible and relatively dramatic impact on rates and rate structures. On the one hand, however, opponents have argued that rates would become volatile and unreasonably discriminatory with respect to the distinction between large and small shippers. In contrast, while conceding that transportation rates would become unstable, advocates have argued that

- (1) increasing competition would tend to lower rates and
- (2) tend to result in rates reflecting more closely the actual cost of providing service.

Table IV depicts the rate impacts experienced by the survey respondents. Of 312 firms indicating a change in the general level of rates paid for common carrier service, 169, or 54.2%, reported increases ranging from a low of 1% to a high of 85%. The typical respondent among this group of 169 has experienced a 13.2% increase. General reductions ranging from a low of 1% to a high of 45% were reported by 143, or 45.8%, of the 312 firms. The typical respondent among this group of 143 has experienced a 10.7% decline in common carrier rates.

TABLE IV

CHANGES IN THE GENERAL LEVEL OF RATES WHICH SURVEY
RESPONDENTS PAY FOR FOR-HIRE TRANSPORT SERVICE

Common Carriage	Mean %	Std. Dev. %	Median %	Mode %	Number of Respondents	% of 378 Respondents
Increase	13.2	11.1	10.5	10.0	169	44.7
Decrease	10.7	7.0	9.9	10.0	143	37.8

Contract Carriage	Mean %	Std. Dev. %	Median &	Mode %	Number of Respondents	% of 378 Respondents
Increase	11.3	13.8	9.6	10.0	81	21.4
Decrease	11.2	7.7	9.9	10.0	89	23.5

With respect to contract carriage, there is a roughly even divide between the 170 firms indicating changes, with 81 reporting rate increases and 89 reporting decreases. The mean percentage change for both groups is of nearly equal magnitude, the general level of rate increases being marginally greater than the decreases by .1%. Contract rate increases reported, however, have a much wider range of variability than the reported declines. The smallest reported increase and decrease was 2%. The largest increase reported by one respondent was a doubling of the rates paid for contract service. At the opposite extreme, one respondent indicated a 50% reduction.

Table V compares the size of responding firms as measured by sales volume to the reported increases and decreases in transport rates. The table is based upon those respondents who supplied information regarding both their sales volumes and changes in the general level of rates which they pay for for-hire service. The largest percentage increases for both common and contract service were reported by firms with sales volumes of \$300 million or less, while the largest percentage decreases for both types of service were reported by firms with sales volumes greater than \$300 million. Firms with sales exceeding \$300 million also reported smallest percentage decreases for both types of service which tended to be greater than the smallest decreases reported by firms with \$300 million or less in sales. With respect to the smallest percentage increases, however, firms with sales of \$300 million or less reported figures comparable to those submitted by the larger firms for common carrier service. For contract service, however, firms with sales of \$300 or less reported smallest percentage increases which tended to be less than those submitted by the larger firms.

TABLE V
REPORTED CHANGES IN THE GENERAL LEVEL OF FOR-HIRE
TRANSPORT RATES RELATED TO SIZE OF RESPONDENTS

		Common Carrier Rate Increases					
Sales Volume		No. & (%) of 378 Respondents Reporting Increase		Smallest Percentage Increase		Largest Percentage Increase	
				(%)	No. of Respondents	(%)	No. of Respondents
\$1-	50,000,000	16	(4.2)	(3)	1	(80)	1
	50,000,001-						
	100,000,000	19	(5.0)	(2)	1	(40)	2
	100,000,000-						
	200,000,000	18	(4.8)	(1)	1	(50)	1
	200,000,001-						
	300,000,000	15	(4.0)	(1)	1	(20)	3
	300,000,001-						
	500,000,000	20	(5.3)	(2)	1	(20)	1
	500,000,001-						
	1,000,000,000	19	(5.0)	(3)	1	(45)	1
	1,000,000,001-						
	5,000,000,000	32	(8.5)	(3)	1	(22)	1
	Over						
	5,000,000,000	9	(2.4)	(1)	1	(22)	1

		Common Carrier Rate Decreases					
Sales Volume		No. & (%) of 378 Respondents Reporting Decrease		Smallest Percentage Decrease		Largest Percentage Decrease	
				(%)	No. of Respondents	(%)	No. of Respondents
\$1-	50,000,000	21	(5.6)	(2)	2	(25)	1
	50,000,001-						
	100,000,000	15	(4.0)	(1)	1	(20)	2
	100,000,001-						
	200,000,000	26	(6.9)	(1)	1	(25)	1
	200,000,001-						
	300,000,000	10	(2.6)	(2)	1	(20)	2
	300,000,001-						
	500,000,000	10	(2.6)	(5)	1	(37)	1
	500,000,001-						
	1,000,000,000	18	(4.8)	(2)	1	(45)	1
	1,000,000,001-						
	5,000,000,000	20	(5.3)	(2)	2	(30)	1
	Over						
	5,000,000,000	10	(2.6)	(3)	1	(20)	1

TABLE V (Continued)

REPORTED CHANGES IN THE GENERAL LEVEL OF FOR-HIRE
TRANSPORT RATES RELATED TO SIZE OF RESPONDENTS

Sales Volume		Contract Carrier Rate Increases					
		No. & (%) of 378 Respondents Reporting Increase		Smallest Percentage		Largest Percentage	
				Increase		Increase	
				(%)	No. of Respondents	(%)	No. of Respondents
\$1-	50,000,000	9	(2.4)	(3)	1	(80)	1
	50,000,001- 100,000,000	4	(1.1)	(3)	1	(12)	1
	100,000,001- 200,000,000	6	(1.6)	(4)	1	(100)	1
	200,000,001- 300,000,000	10	(2.6)	(3)	2	(11)	1
	300,000,001- 500,000,000	7	(1.9)	(3)	1	(20)	1
	500,000,001- 1,000,000,000	17	(4.5)	(3)	1	(25)	1
	1,000,000,001- 5,000,000,000	17	(4.5)	(2)	1	(20)	1
	Over 5,000,000,000	4	(1.1)	(10)	3	(20)	1

Sales Volume		Contract Carrier Rate Decreases					
		No. & (%) of 378 Respondents Reporting Decrease		Smallest Percentage		Largest Percentage	
				Decrease		Decrease	
				No. of		No. of	
				(%) Respondents	(%) Respondents		
\$1-	50,000,000	11	(2.9)	(2)	1	(20)	1
	50,000,001-						
	100,000,000	10	(2.6)	(3)	1	(22)	1
	100,000,001-						
	200,000,000	10	(2.6)	(2)	1	(20)	1
	200,000,001-						
	300,000,000	8	(2.1)	(2)	1	(20)	2
	300,000,001-						
	500,000,000	11	(2.9)	(5)	3	(30)	1
	500,000,001-						
	1,000,000,000	7	(1.9)	(3)	1	(20)	1
	1,000,000,001-						
	5,000,000,000	13	(3.4)	(2)	1	(25)	1
	Over						
	5,000,000,000	13	(3.4)	(4)	1	(25)	1

Division of Traffic by Mode and Type of Carriage

Among the principal goals of transportation economic regulation over the years has been ". . . to recognize and preserve the inherent advantages of each . . ." mode. (3) The "inherent advantage" of a mode with respect to the kinds of traffic which it is best suited to transport derives from its economic; i.e., cost structure, and technological characteristics. The present regulatory reforms reflect the belief that the U.S. transportation system has evolved and its service options have proliferated to the point that the user, not a regulatory bureaucracy, is the single best qualified party to judge which mode(s) and carrier(s) offer the inherent advantage dictated by the user's particular circumstances. By allowing carrier management greater decision making latitude in such crucial areas as pricing and entry into new markets, deregulation offers for-hire carriers the opportunity to compete on the basis of criteria which may presumably shift the relative balance of power with respect to which mode(s) and carrier(s) possess the inherent economic and technological advantages for various types of traffic.

While the survey instrument used to conduct this study did not solicit information regarding categories of traffic, it did collect data concerning the percentage division of traffic by tonnage between modes and types of carriage for both inbound and outbound movements. This information was requested for June 1980, just prior to the Motor Carrier Act of 1980 enacted on 1 July, and as of the time the survey participants completed the questionnaire in January, February, and March of 1982. This information was solicited so as to make ante and post-regulatory reform comparisons in an effort to determine whether or not there are any significant differences in the division of traffic between modes and types of carriage in the wake of the reforms.

Table VII depicts the before and after comparisons of the mean percentage division of traffic tonnage between modes. The only mode to post an appreciable net gain in the percentage of both inbound and outbound traffic hauled is motor carriage. Each of the other modes posted slight net declines, with the exception of modest net gains in pipeline traffic. It is interesting to compare these results with the data in Table VIII which depicts the before and after comparisons of the mean percentage division of traffic tonnage between types of carriage. Common carriage is the only category to post net decreases in the relative division of traffic: 3.8% inbound and 3.0% outbound. Considered together, the evidence in Tables VII and VIII suggest that, while common motor carriage is the principal means of transport relied upon by the survey participants, it has lost traffic to private and contract motor carriage over the 18 months from mid-1980 to the first quarter of 1982. Furthermore, the mean percentage shifts in traffic are primarily between types of carriage rather than between modes.

TABLE VII
 ANTE-AND POST-DEREGULATION MEAN PERCENTAGE DIVISIONS
 OF TRAFFIC TONNAGE BETWEEN MODES

Mode	Inbound Movements			Number & (%) of 378 Respondents	
	June 1980	1st Qtr. 1982	Gains & (Losses)		
Motor Carrier	63.0	64.1	1.1	338	(89.4)
Rail	37.9	37.4	(.5)	251	(66.4)
Air	7.0	6.4	(.6)	141	(37.3)
Water	20.3	19.8	(.5)	81	(21.4)
Pipeline	29.0	29.1	.1	20	(5.3)

Mode	Outbound Movements			Number & (%) of 378 Respondents	
	June 1980	1st Qtr. 1982	Gains & (Losses)		
Motor Carrier	76.8	77.9	1.1	350	(92.6)
Rail	27.1	25.8	(1.3)	212	(56.1)
Air	6.3	6.1	(.2)	148	(39.2)
Water	10.3	10.3	-----	63	(16.7)
Pipeline	17.0	17.1	.1	10	(2.6)

TABLE VIII
 ANTE- AND POST-DEREGULATION MEAN PERCENTAGE DIVISIONS
 OF TRAFFIC TONNAGE BETWEEN TYPES OF CARRIAGE

Types of Carriage	Inbound Movements			Number & (%) of 378 Respondents	
	June 1980	1st Qtr. 1982	Gains & (Losses)		
Private	23.6	24.6	1.0	212	(56.1)
Common	75.6	71.8	(3.8)	318	(84.1)
Contract	21.7	24.4	2.7	151	(40.0)

Types of Carriage	Outbound Movements			Number & (%) of 378 Respondents	
	June 1980	1st Qtr. 1982	Gains & (Losses)		
Private	28.3	28.8	.5	222	(58.7)
Common	71.1	68.1	(3.0)	324	(85.7)
Contract	21.4	24.3	2.9	171	(45.2)

Competition for Traffic

By relaxing industry and market entry control, regulatory reform was expected to intensify competition among for-hire carriers for shippers' patronage. On this point, both advocates and opponents of the new policy environment were in accord. The impact of liberalized entry restrictions on the motor carrier industry has been dramatic. There were 2,452 grants of operating authority to new industry entrants over the period July 1980-June 1981, up from the 1,423 granted during fiscal year (FY) 1980. For the 12 months following passage of the Motor Carrier Act of 1980, applications for new operating authority, including both new entrants and extensions of existing authority, numbered 29,311, up from 22,735 for FY 1980. (4)

The evidence generated by the present study indicates that these trends are indeed impacting the users of for-hire transport service in terms of the number of carriers competing for traffic since deregulation. Table IX presents the mean changes in the number of for-hire carriers actively competing for the respondents' patronage as shippers. Approximately 87% of 259 firms reporting a change in the number of common carriers soliciting their business indicated an increase. The typical respondent among this group has experienced a mean of 25 additional common carriers seeking his patronage, while the minority of respondents reporting a decline has experienced a mean of 11 fewer common carriers seeking its traffic. Approximately 97% of 200 firms reported an increase in the number of contract carriers soliciting their traffic. The typical respondent among this group has experienced a mean of 11 additional contract carriers competing for his patronage, one more than the mean decrease in the number of contract carriers competing for the patronage of the seven firms reporting a decline.

TABLE IX
CHANGES IN THE NUMBER OF CARRIERS ACTIVELY COMPETING
FOR SURVEY RESPONDENTS' PATRONAGE AS SHIPPERS

Type of Carriage	More Carriers Competing				No. of (%) of 378 Respondents	
	Mean No. of Carriers	Std. Dev.	Median	Mode		
Common	25	25	20	20	225	(59.5)
Contract	11	13	6	5	193	(51.1)

Type of Carriage	Fewer Carriers Competing				No. & (%) of 378 Respondents	
	Mean No. of Carriers	Std. Dev.	Median	Mode		
Common	11	16	7	10	34	(9.0)
Contract	10	12	2	1	7	(1.9)

Table X compares the reported increases in the number of common and contract carriers competing for shipper patronage to the size of responding firms as measured by sales volume. The table is based on those participants reporting both their sales volumes and increases in the level of competition. As the far right column in the table reveals, firms in each of the eight size categories have experienced large increases in the number of both common and contract carriers

TABLE X
REPORTED CHANGES IN THE NUMBER OF FOR-HIRE CARRIERS
ACTIVELY COMPETING FOR TRAFFIC RELATED
TO SIZE OF RESPONDENTS

Sales Volume		No. & (%) of 378 Respondents Reporting Increase		More Common Carriers Competing			
				Smallest Increase		Largest Increase	
				No. of Carriers	No. of Respondents	No. of Carriers	No. of Respondents
\$1-	50,000,000	28	(7.4)	2	1	100 or more	2
	50,000,001-100,000,000	22	(5.8)	4	1	50	1
	100,000,001-200,000,000	33	(8.7)	2	2	100 or more	1
	200,000,001-300,000,000	23	(6.1)	5	2	100 or more	2
	300,000,001-500,000,000	24	(6.3)	1	1	50	4
	500,000,001-1,000,000,000	25	(6.6)	1	1	100 or more	4
	1,000,000,001-5,000,000,000	38	(10.1)	2	1	100 or more	6
	Over 5,000,000,000	11	(2.9)	5	2	75	1
Sales Volume		No. & (%) of 378 Respondents Reporting Increase		More Contract Carriers Competing			
				Smallest Increase		Largest Increase	
				No. of Carriers	No. of Respondents	No. of Carriers	No. of Respondents
\$1-	50,000,000	21	(5.6)	1	2	25	1
	50,000,001-100,000,000	21	(5.6)	2	2	40	1
	100,000,001-200,000,000	26	(6.9)	1	3	20	5
	200,000,001-300,000,000	24	(6.3)	2	3	50	2
	300,000,001-500,000,000	18	(4.8)	1	1	20	2
	500,000,001-1,000,000,000	22	(5.8)	1	2	60	1
	1,000,000,000-5,000,000,000	29	(7.7)	2	2	100 or more	1
	Over 5,000,000,000	12	(3.2)	1	2	27	1

actively competing for their shipping patronage in the wake of deregulation. It is interesting to note that firms in the smaller categories, those with sales volumes of \$300 million or less, have experienced the greatest increase in the number of common carriers competing for their traffic. Firms with sales above \$300 million tended to report the largest increase in the number of competing contract carriers. The smallest increases reported by firms with sales of \$300 million or less tend to be larger than the smallest increases indicated by the larger respondents.

Table X omits the comparison of firm size with reported decreases in the number of common and contract carriers competing due to the relatively small number of respondents reporting declines: 34 respondents with respect to common carriage and 7 with respect to contract service. It should be noted, however, that the largest decreases in the number of common carriers competing for traffic were submitted by firms in the largest two size categories: a reduction of 100 or more by one firm with sales between one and five billion dollars and a reduction of 30 by one firm with sales over five billion. In contrast, the largest decline in the number of common carriers competing for his traffic reported by one firm in the smallest size category, \$50 million or less, was six. With respect to contract service, the largest decrease reported was 30 carriers by one firm with sales between \$100 million and \$200 million.

The New Environment: Users' Attitudes

The demand for freight transport service is a derived demand. That is, it derives from the necessity to create time and place utilities and contribute to the creation of possession utility with respect to the traffic that is physically moved. In other words, for-hire freight transport service is not demanded for the sake of a physical movement from one point to another, but rather for the economic value produced by the creation of these utilities. In a market oriented economy, the presumed best judge of how effectively and efficiently this value is produced is the user dependent upon transport service to help product it. It is therefore of interest to learn what the users' attitudes are toward the results effected, if any, by the new policy environment in which for-hire freight transportation operates in assisting the creation of economic value.

Table XII presents the respondents' opinions concerning the connection they perceive to exist between regulatory reform and the impacts which they reported to have experienced in its wake. Three hundred thirty-three, or approximately 88%, of the 378 survey participants believe that deregulation is either directly or indirectly related to the changes they reported with respect to rates, division of traffic tonnage, and competition for their patronage. Approximately 67% expressed the opinion that deregulation is directly related to those changes. It must be noted, however, that many of the respondents commented on the survey form that the impacts experienced are as much attributable to the inflationary and recessionary state of the national economy as they are to deregulation.

TABLE XII

RESPONDENTS' PERCEPTIONS OF THE RELATIONSHIP
BETWEEN DEREGULATION AND REPORTED CHANGES

Changes and Their Relationship to Deregulation	No. & (%) of 378 Respondents	
Direct	253	(66.9)
Indirect	80	(21.2)
No Relationship	13	(3.5)
Not Sure	16	(4.2)
Non-Respondents	16	(4.2)

Despits this caveat, or perhaps because of it, Table XIII reveals that 316, or approximately 84%, of the respondents feel that the net affect of transportation deregulation through at least the first quarter of 1982 has been to the advantage of their firms' distribution functions. A majority of the respondents, albeit a smaller one, approximately 55%, believe that de-regulation will be to their advantage over the next five years. The number of respondents anticipating a net disadvantage over the next five years is triple the number perceiving a negative impact as of early 1982. The data also reveals considerably more uncertainty with regard to future consequences.

TABLE XIII

RESPONDENTS' PERCEPTIONS OF DEREGULATION'S IMPACT
ON THEIR DISTRIBUTION FUNCTIONS

Impact of Deregulation	No. & (%) of 378 Respondents			
	As of the 1st Qtr. of 1982		Over the Next 5 Years	
Has been an advantage	316	(83.6)	209	(55.3)
Has been a disadvantage	17	(4.5)	58	(15.3)
Not sure	38	(10.0)	104	(27.5)
Non-respondents	7	(1.9)	7	(1.9)

CONCLUSIONS AND RECOMMENDATIONS

It was expected that if the sound and fury accompanying the transportation regulatory policy debate were even modestly reliable precursors of the actual impact which would be felt once significant reforms were installed, then this study would surely uncover some of the more significant affects which both characterize the new environment and suggest future trends. Based on the results presented herein and other results which space limitations have precluded, the authors are satisfied that their work has accomplished this. It did not require this study to persuade anyone knowledgeable of U.S. transportation issues that the for-hire freight transport industry in this country is highly competitive. It did require research of this sort to discern the scope and intensity of that competition as it is developing in the aftermath of regulatory reform.

How one interprets the evidence presented herein depends almost entirely upon one's subjective biases regarding the entire history of federal regulatory policy toward for-hire transport activity. This is because the data, with one exception, does not provide an unequivocal basis for stating dogmatically whether or not regulatory reform has been in the best interest of users and providers. Leaving aside for the moment any judgment on the wisdom and efficacy of regulatory reform, the authors see the following implications flowing from the impacts reported by the survey respondents.

From the Shippers' Perspective

First, and most conspicuously, the overwhelming consensus among the users of for-hire transport service represented in this paper is that deregulation has been to their advantage, at least up through the first quarter of 1982. This is interesting in view of the evident disruption in the general level of rates precipitated by deregulation for both common and contract service. This combination of results suggests that shippers are enjoying the greater range of options available to them in terms of the greater absolute number of carriers competing for their traffic. It also suggests that, despite general rate increases reported by nearly 45% of the respondents for common carrier service and by approximately 21% for contract service, carriers are being more responsive to the needs and/or desires of shippers with respect to the types and quality of transport services provided.

Another factor contributing to shipper satisfaction with deregulation's impacts is suggested by the evidence presented concerning the percentage divisions of traffic between modes and types of carriage. Trucking is the only mode posting appreciable gains for both inbound and outbound movements, while common carriage is the only one of three forms posting across the board losses. Contract carriage recorded the largest gains: 2.7% inbound and 2.9% outbound. Private transport also gained, but more modestly. In light of the opportunity afforded contract carriers by the Motor Carrier Act of 1980 to solicit and serve more clients, these results suggest that shippers are increasingly finding contract service the closest and best alternative to private transport. Furthermore, as Table IV reveals, the mean percentage increase in the general rate level for contract service is less than that for common carrier service, while the mean percentage decrease in the general rate level for contract service is greater than that for common carriage. It appears,

therefore, that contract carriage is enjoying an important competitive edge on the basis of price and that shippers are finding the difference sufficiently attractive to cause a diversion in traffic.

From the Carriers' Perspective

The results presented herein have particularly vital implications for carrier management. Although any prioritization of those implications is subject to legitimate dispute, the authors suggest the following. First and most conspicuously, the for-hire transport industry, while it has always been competitive, has become intensely so in the new policy environment. This phenomenon, combined with the fact that shippers are generally pleased with the results thus far and the greater decision making latitude which deregulation gives to carrier management, means that for-hire transport management must adopt and develop a far more sophisticated marketing orientation to their business than was the case in a strict regulatory atmosphere. Using the railroads as an example, this was hinted at as long ago as 1964 by Theodore Levitt:

They let others take customers away from them because they assumed themselves to be in the railroad business rather than in the transportation business. The reason they defined their industry wrong was because they were railroad-oriented instead of transportation-oriented; they were product-oriented instead of customer-oriented.

What the railroads lack is not opportunity, but some of the same managerial imaginativeness and audacity that made them great.

(5) (Emphasis added.)

From the standpoint of practical application, this means

1. understanding why the shipper needs and uses transport service; i.e., to aid in creating essential economic values, not for the sake of moving traffic by truck, rail, air, etc.,
2. recognizing and understanding exactly what the shipper needs and expects of the transportation "product" in terms of the services offered, the quality of those services, and the prices charged, and
3. carefully defining and identifying the markets, geographically and/or by types of traffic, which the carrier is going to concentrate on serving based on an explicit recognition and definition of its objectives and a candid assessment of its resources and capabilities relative to competitors.

Second, carrier management must be able to identify its costs precisely and control them within very narrow margins. This is absolutely essential information if a carrier expects to intelligently negotiate rate/service packages with shippers. In view of the latitude which providers and users have to negotiate under deregulation, the carrier intending to survive and succeed in the long run must know the composition of its total cost structure in terms of the breakdown between fixed and variable costs. It must also know the contribution made to profits by each shipper, type of traffic, and service offered. This knowledge is necessary if intelligent traffic generating decisions are to be made regarding what kind of concessions are possible, the extent of those concessions, and to whom they can be offered. As Harvard's Professor of Transportation, Daryl Wyckoff, observes, " . . . an adroit company working with a full deck of cards can do pretty sophisticated things' to control costs and improve service."

Finally, carrier management must recognize and accept the fact that, more so than ever before, the successful competitor must be flexible. While this flexibility must be grounded in the precise knowledge of its costs and sources of revenues, what this means in practical terms is that carrier management must master the give and take skills of negotiation and bargaining. What this calls for is a new breed of transportation professional; i.e., as Theodore Levitt might put it, an astute businessman with a customer orientation as opposed to a pure transportation expert with a product orientation.

From Society's Perspective

With respect to the wisdom and efficacy of transportation deregulation as a public policy choice, the authors believe that the evidence supports the conclusion that the course chosen has thus far demonstrated itself to be the correct one. Deregulation has been dramatic, reversing a 90 year tradition in a span of less than three years. It has also been traumatic for many carriers unprepared, unable, and/or unwilling to adjust as rapidly as conditions have dictated. But transport service is a means to an end--the creation of economic value--not an end in itself. The consensus among those represented in this paper who rely upon for-hire service to assist in creating that value is that deregulation has thus far had a positive impact on that process.

Deregulation is unquestionably making life more difficult for carriers in terms of the competitive challenges they confront. The most conspicuous recent testimonies to this fact are Braniff Airlines and Spector Red Ball trucking. Nevertheless, to paraphrase a recent Wall Street Journal editorial on Braniff's demise, deregulation cannot be greatly faulted for the for-hire transport industry's ills. It has contributed to the turbulence only by permitting carrier management greater decision making discretion in critical areas and allowing the market, rather than a regulatory body, to judge the soundness of those decisions. (7)

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